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THIRD SEASON RESULTS FROM SHIP RESPONSE INSTRUMENTATION ABOARD --ETC(U)

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13. ABSTRACT

One of the class of eight SL-7 high speed containerhips has been extensively instrumented with stress, strain and motion sensors. These have been modified for the Third Season of data acquisition to emphasize measurement of hatch corner and bow sideshell strains. Much of the previous instrumentation inventory, including a wave height radar and Tucker wave meter, has also been employed in the Third Season. This report contains a summary of the recorded data, examples of the analog records, a catalog of the data formats and a listing of the available data intervals. Some analysis of the data is also reported including midship bending stresses encompassing all three data seasons.

Data collection for the third season began with the west-bound North Atlantic voyage 59 on January 17, 1975 and terminated with westbound voyage 61 on March 17, 1975.

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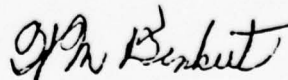
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This report is one of a group of Ship Structure Committee Reports which describes the SL-7 Instrumentation Program. This program, a jointly funded undertaking of Sea-Land Service, Inc., the American Bureau of Shipping and the Ship Structure Committee, represents an excellent example of cooperation between private industry, regulatory authority and government. The goal of the program is to advance understanding of the performance of ships' hull structures and the effectiveness of the analytical and experimental methods used in their design. While the experiments and analyses of the program are keyed to the SL-7 Containership and a considerable body of the data will be developed relating specifically to that ship, the conclusions of the program will be completely general, and thus applicable to any surface ship structure.

The program includes measurement of hull stresses, accelerations and environmental and operating data on the S. S. Sea-Land McLean, development and installation of a microwave radar wavemeter for measuring the seaway encountered by the vessel, a wave tank model study and a theoretical hydrodynamic analysis which relate to the wave induced loads, a structural model study and a finite element structural analysis which relate to the structural response, and installation of long term stress recorders on each of the eight vessels of the class. In addition, work is underway to develop the initial correlations of the results of the several program elements.

Results of each of the program elements will be published as Ship Structure Committee Reports and each of the reports relating to this program will be identified by an SL- designation along with the usual SSC- number. A list of all of the SL reports published to date is included on the back cover of this report.

This report contains a portion of the data with a preliminary discussion and evaluation of the third season of data collection from 17 January 1975 to 17 March 1975. The instrumentation was modified this season to emphasize hatch corner and bow side shell strains. The basic instrumentation of prior seasons was retained. Please refer to the outside rear cover for ordering information on the reports from the first two seasons numbered SL-7-8 and SL-7-9.



W. M. Benkert
Rear Admiral, U.S. Coast Guard
Chairman, Ship Structure Committee

Cover (2)

(SL-7-10)

THIRD SEASON RESULTS FROM SHIP RESPONSE INSTRUMENTATION
ABOARD THE SL-7 CLASS CONTAINERSHIP
S.S. SEA-LAND McLEAN IN NORTH ATLANTIC SERVICE

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SHIP STRUCTURE COMMITTEE
1976

(SL-7-10)

Technical Report

on

Project SR-211, "SL-7 Data Collection"

THIRD SEASON RESULTS FROM SHIP RESPONSE INSTRUMENTATION
ABOARD THE SL-7 CLASS CONTAINERSHIP
S.S. SEA-LAND McLEAN IN NORTH ATLANTIC SERVICE

by

R. R. Boentgen

Teledyne Materials Research

under

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U. S. Coast Guard Headquarters
Washington, D.C.
1976

ABSTRACT

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Data collection for the third season began with the westbound North Atlantic voyage 59 on January 17, 1975 and terminated with westbound voyage 61 on March 17, 1975.

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I. INTRODUCTION

The S.S. SEA-LAND McLEAN is the first of the new SL-7 class of high-speed container ships. Characteristics of the vessel are given in Table I, and the vessel is shown in the photograph of Figure 1. A multifaceted program of analysis and experiments, coordinated by the SL-7 Program Advisory Committee of the National Academy of Sciences--National Research Council, has been instituted to study this ship's structure and its responses to imposed loading. One important facet of this program is the collection of data on structural and dynamic responses of the actual (i.e., full-scale) ship's structure. This is being accomplished by an on-board instrumentation system with sensors located throughout the vessel measuring strains, stresses, accelerations, various sea characteristics and ship operating parameters. Presented in this report is a summary of the data gathered during the third season of operation on North Atlantic Voyages 59-61 during the period 17 January 1975 to 17 March 1975.

Data acquired during the first season were presented in Reference 1, which covered Voyages 1 to 12 on the North Atlantic during the period 8 October 1972 to 5 April 1973. A total of 80 data tapes were recorded containing over 50,000 sensor data intervals from more than 100 transducers. The report included a description of the digitized data, correlations of stresses with sea state, simultaneous response data from all transducers during selected portions of a rough voyage, and a consideration of torsional responses. Data were reported in a number of forms, including expanded time-histories, logbook tabulations, tabulations of maximum values scaled from compressed time-histories, and plots derived from parametric studies of digitized response and logbook data.

Data acquired during the second season were presented in Reference 2, which covered Voyages 25-38 on the North Atlantic during the period 22 September 1973 to 31 March 1974. A total of 94 data tapes were recorded containing over 60,000 sensor data intervals from more than 100 transducers. Except for some minor changes, the arrangement of the transducers was identical to that employed during the first season. A major slam event was experienced during the second season while the ship was at very slow speed. These data were reported in the form of analog plots, tables of maximum recorded values, and expanded time-histories in addition to presentations similar to those made for the first season.

A significant amount of new strain gage instrumentation was installed for the third season data acquisition program. The location of this gaging was based on observations of damage incurred in the first two years of vessel operation. Specifically, radial cracks from the forward and some aft hatch corners and green water set-down of the forecastle and bow flare plating had been experienced. In an attempt to characterize the loading in these areas, additional strain gages were added. All new instrumentation was assigned to Recorder No. 2 while keeping the Recorder No. 1 assignments similar to those used in the second data acquisition season. All primary data (i.e., horizontal and vertical bending, pitch, roll, etc.) including those signals required to extract the wave height data from the slant range radar signal, are collected on Recorder No. 1, the same signal being recorded on the same channel in each interval. In contrast, four signals are recorded on each channel of Recorder No. 2, one in each of the four sequential modes. These assignments are further discussed in this report.

A detailed description of the instrumentation system has been published previously in Reference 3, and the calibration of the McLEAN is reported in Reference 4.

The purpose of this document is to present some of the more significant trends derived from Third Season data and to serve as an index for the retrieval of data, in the various formats available, for further analysis and correlation. As such, it is not intended that all possible data correlations or even that all raw data be reported herein, since much of the data is available only in FM magnetic tape format. This analysis task is part of the overall SL-7 program and is identified as SR-211.

II. CONCLUSIONS

The following conclusions are based on the review of Third Season data and data reduction and statistics as completed to date and presented in this report:

1. The highest peak-to-trough stress measured was 79 Ksi on the forward hatch corner circumferential gage (F_yB).
2. The hatch corners exhibit high stresses (especially in quartering seas) even under moderate wave conditions.
3. A correlation exists between the midship torsional stress and the circumferential hatch corner stress.
4. For the environmental conditions encountered (Beaufort No. 9, or less), sideshell stresses were relatively low and almost unidirectional in tension, indicating relatively low impact loading.
5. The environmental conditions encountered during the Third Season, as indicated by the Beaufort Number distribution, were less severe than the yearly average for the mid-North Atlantic.

III. INSTRUMENTATION SYSTEM

The basic instrumentation system has been described fully in previous reports (see References 1, 2 and 3). Described herein are the changes incorporated for the Third Season and the channel assignments and formats used in the data acquisition.

A. Added Instrumentation

A significant amount of new instrumentation was installed for Third Season data acquisition. Only minor revisions were made on the Recorder No. 1 inputs, but all modes of Recorder No. 2 inputs represent reassigned or newly-installed strain gages. In order to allow for correlations between various regions of the bow, the modes were structured to have overlapping recording periods. Table II lists the various groups of gages recorded in each mode.

1. Bow Sideshell

Single-element weldable strain gages were installed along the longitudinal axes of selected vertical stiffeners at the free top surface. They were

located on central stiffeners between major frames at the vertical midpoint. Gage locations and identification are shown in Figure 2.

2. Hatch Corner

Figure 3 shows the location and identification of strain gages at the three selected hatch corner cutouts. The gages at Frame 144 were mounted during the original installation. Although the rosette (AR₂) was recorded during the first two seasons, the S_y gages were used only during the calibration experiment. (See Reference 4.) At Frame 258, the rosette was also previously used but the hatch corner gages were newly installed. At Frame 290, all new gages were installed since the rosette at this location had been damaged during the course of structural modifications in this area. Rosette identification is the same as that previously used.

Recording of the hatch corner rim gages and their associated rosette was in the "D" mode of each index, as indicated in Table II. The forward corner gages at Frame 290 were recorded in all "D" modes and Frame 144 or Frame 258 gaging were recorded alternately on a daily basis.

3. Forward Dyadic Array

The only change made to Recorder No. 1 channel assignments was the substitution of a forward quarter point vertical bending transducer for the forward shearing stress array on channel 13. It was expected that useful comparisons could be made between the output of this sensor and the newly-installed bow gages. Since the gage array was installed only during the Third Season, a vertical bending calibration is not available for it.

B. Recording Format

All of the information obtained from the various transducers located throughout the vessel was recorded on two 14-track analog FM tape recorders located in the instrumentation room. Recorder No. 1, designated the primary recorder, recorded the same 13 signals whenever it was placed in operation. The fourteenth channel was used as a noise compensation channel during reproduction.

The second recorder had its first thirteen channels switched through four modes, designated A, B, C, and D. Each mode was recorded for thirty minutes sequentially. Channel 14 was again used as a compensation channel in all modes. Each 30-minute period is a data "interval," and is assigned an interval number. Any particular segment of data can thus be identified by referring to the following nomenclature.

1. Tape number--(All odd numbers are from No. 1 Recorder and all even numbers are from Recorder No. 2. Third Season analog tapes are numbered from 201/202 to 233/234 inclusive.)
2. Voyage number and direction (E = East, W = West).
3. Index number (sequential numbering of each four-hour logbook entry accompanying each data tape).
4. Channel number and mode letter (Recorder No. 2 only).

5. Interval number.

By specifying "Tape No. 202, Voyage 59E, Index 1, Channel 1-A, Interval 1" a specific 30-minute data interval is identified, in this case on Recorder No. 2.

Each interval of 30 minutes, whether on Recorder No. 1 or No. 2, is automatically preceded by a one-minute electrical zero and a one-minute period of calibration signals. A typical data interval trace is presented in Figure 4.

C. Configuration of Transducers

1. Strain Gage Signals

The majority of the transducers used in this system are obtained from various configurations of single-element strain gages with associated bridge completion and calibration resistors. These gages are attached by spot-welding to the surface of various hull structural elements. Each strain gage is constructed with inherent temperature compensation. That is, if the gage is attached to a plate which is subsequently warmed (or cooled) but is otherwise unrestrained, no change in strain will be indicated. If that plate is now restrained from expansion due to the temperature change, a signal associated with the degree of restraining stress generated will be indicated even though no change in length occurred. Such a restraint is generated, for example, when the sun warms the deck or upper hull girder while the lower hull is in cooler water. This diurnal variation tends to induce compressive deck stresses and tensile stresses under the waterline even though the displacement tends to hog the ship.

Sketches summarizing the locations of the strain gage sets are presented in Figures 5 and 6. It should be noted that the single-element strain gages used are installed in various configurations which have different properties. These are described in detail in Reference 3, but can be summarized as follows:

- a. Single element (quarter bridge) - a single strain gage element. Its output is proportional to the strain along the element.
- b. Dyadic gage - two single elements at an angle of 56° to each other for materials such as steel with $\mu = 0.28$. In this configuration the output is proportional to the stress along the axis of symmetry.
- c. A dyadic pair of gages oriented longitudinally on each side of the ship, each pair connected to one arm of the bridge circuit. Depending on whether the arms are opposite or adjacent, the output of this arrangement is proportional to the average or horizontal bending stress.
- d. Shear gage (half-bridge) - two single elements at right angles to each other. The output is proportional to the shearing stress along the axis of symmetry.
- e. A shear gage half-bridge on each side of the ship connected to form a full bridge. Depending on the polarity of the connection, the output is proportional to the vertical or torsional shearing stress.

- f. Rosette - three single gage elements, each at a different direction, near a point. This is a special case of the single element gage. Each signal output is recorded separately and simultaneously. If static strains are added these readings completely define the state of strain (both the normal and shearing strains, in any direction) at this point. In the McLEAN installation, the rosette gage elements were oriented in a longitudinal, athwartship and diagonal (from forward port to aft starboard) direction.

2. Transducer Signals

In addition to the strain gage signals discussed above, 10 additional transducer signals are provided as inputs to the recording system. These signals, consisting of eight linear accelerometers and two angular displacement pendulums, are fully described in Table III. The primary function of these signals is to provide a record of ship motions occurring at the same time as the recorded strain gage information.

3. Rudder Angle

Although in previous data seasons a multiplexed signal consisting of various ship operating parameters was recording on Channel No. 10 of Recorder No. 1, in the Third Season this was restricted to rudder angle.

4. Wave Height Radar

The Ocean Wave Height Radar System (OWHRS) developed by the Naval Research Laboratory was operational for part of the third season, and slant-range data were recorded. The transmitting electronics package is located at the parabolic antenna, which is mounted at the starboard wing of the bridge and adjusted to look down at the water surface at a fixed angle to the ship. The slant-range signal, therefore, contains components of ship motions, particularly rolling. The reduction of these data to absolute wave height is the objective of a separate project under the Ship Structure Committee.

5. Tucker Wave Meter System

A second attempt to achieve wave data has been made in this program by the continued inclusion of a Tucker Wave Meter aboard the vessel. This British device, which consists of pressure cells and accelerometers mounted both port and starboard, was installed at the end of the first season's operation. Data from this instrument is to be compared to that obtained from the OWHRS.

6. Scratch Gages

Under a separate Ship Structure Committee project (SR-215, "Extreme Stress Data"), mechanical scratch gages have been installed at a midship location on all eight vessels of the class. The device consists of a simple extensometer with mechanical amplification which causes a stylus to mark on sensitive paper. The paper is advanced once every four hours and the record thus obtained shows the maximum positive to maximum negative excursion of the stylus in a four-hour period. One scratch gage is located in each ship's starboard tunnel near the midship frame except for the McLEAN, which has one scratch gage in each tunnel. Data tapes are being retained by Teledyne as part of the SL-7 Data Library.

7. Logbook

An important adjunct to the data recorded on the two magnetic tape recorders is the data logbook kept by the instrumentation observer. Appendix A contains a summary of logbook entries. Environmental conditions are noted here along with information to index the tape recordings. All sea, wind and wave conditions reported here are derived from this source.

8. Quick-looks

The data reduction process actually begins with "quick-look" playbacks made aboard the ship. Each tape is played back on an oscillograph at a relatively high speed, with a low paper speed. This produces a compact hard-copy record for review. Signal peaks, relative levels and overall variations may be judged from these records, but details of the waveform cannot be seen.

To summarize, shipboard data gathering produces analog magnetic tapes of the recorded data from two tape recorders running simultaneously. In addition, a manual logbook record is maintained which correlates the magnetic tape data with the conditions existing at the time of the data recording. Quick-look records are also produced for on-site quality control purposes, but these have little application to most data analysis procedures except for scaling an overall maximum value for each interval.

D. Data Analysis Operations at TMR

1. Analog Oscillographic Records

As shown in Figure 7, the preponderance of data reduction takes place after the recordings are removed from the ship. After review of the logbook records and taking into account the notes of the on-board observer, certain sections of data are played back onto oscillographic records. Details of this operation depend on the type of analysis being done; it may be desired to compare one channel relative to another for a long period, or only the response for a short period around some event such as a slam. Examples of records are presented in later sections.

2. Filtering and Digitizing

Most large-magnitude stress records, especially those associated with slamming and similar dynamic events, can be separated into two components: wave-induced, and first-mode two-noded vibrations ("whipping," or "springing"). Each component is characterized by its frequency. The first-mode frequency of the McLEAN at normal operating load is 0.80 Hz, while wave-induced components are lower in frequency (i.e., longer in period). Separation of these components is accomplished by passing the electrical signal representing the stress level or sensor output through electronic filters adjusted for the appropriate bandpass frequencies (see Figure 8). The resulting filtered signal (or the original combined signal) may then be reproduced on an oscillograph to produce a time history, or it may be digitized in order to change its format for further processing.

Certain channels are selected for digitizing and further processing into library tapes. The details of this process are presented in Reference 4. In this step the logbook record is collated with the corresponding stress or motion data. In addition to a digitized data record, this operation also computes numbers

characterizing each data interval, such as the maximum peak-to-trough, root-mean-square (RMS), and number of cycles. Some of these data have been used further in various analyses described below.

The library tapes (see Figure 7) can be summarized further by deletion of the complete digitized record. This summary tape can provide a computer-generated tabulation of environmental and characteristic data. Examples of these data are provided as a separate Appendix to this report. The summary tape also provides the data base for the parametric studies discussed below. Header block and data summary block formats for summary tapes are given in Tables IV and V, respectively. It should be noted that summary tapes do not contain data on which to base spectra, nor, as presently structured, do they contain computed values for the original waveform. Values reported are only for the wave-induced (maximum, RMS) and first-mode (maximum only) components.

A general summary of the SL-7 data formats currently available is presented in Table VI.

IV. RESULTS

A. Environmental Conditions

Environmental conditions experienced during the third season data acquisition were generally milder than those encountered in previous seasons and were, on average, lower than an average year at mid-Atlantic. Figure 9 presents a comparison of average Beaufort Numbers for the mid-North Atlantic and those observed for the Third Season. Note that the average and observed frequency of occurrence for Beaufort Numbers 5, 6, and 7 are almost the same. The observed frequency is lower than the average for higher Beaufort Numbers and higher than the average for the lower Beaufort Numbers.

B. Hatch Corner Stresses

The highest stresses observed during the Third Season, and, in fact, the highest stress ever recorded aboard an SL-7, were at the forward hatch corner. Figure 10A, B, C presents data from these gages, FyA, FyB, and FyC respectively, as a function of Beaufort Number and relative wave direction (RWD). Note that the highest stresses were at the FyB location and that the highest stresses occurred in following and beam sea direction for the higher Beaufort Numbers and in head seas for the lowest Beaufort Number.

It was also characteristic of these stresses that their magnitude was high even for relatively low wave heights. Figure 11 presents a composite of simultaneous signals from Recorder No. 1 and No. 2 showing some of these relationships. The frequency, location of maxima, and general envelope of amplitudes show a high degree of correlations between the TSM, Roll and FyB signals. A probable explanation lies in the link between ship's roll which produces torsional loading thus imposing high hatch corner stresses. Such high stresses were previously noted during the calibration event (see Reference 4) when the vessel was loaded statically with a torsional load. The highest stress measured at that time was 10.2 Ksi at the hatch corner just forward of the aft house. No gages were located at the forward hatch during calibration or during the first two data acquisition seasons.

In order to explore the relationship observed between TSM and F_yB , Figures 12A and 12B were prepared. These clearly indicate the linear relationship between TSM and F_yB , and also indicate the presence of another factor inherently different in eastbound and westbound voyages. This factor is probably the relative wave direction, since with prevailing winds generally from the west, an east-bound crossing would have a preponderance of following seas and, conversely, a west-bound crossing would have a preponderance of head seas.

Table VII is a listing of four maximum recorded stress conditions that occurred during the past season. It should be noted that the highest rim stress occurs while the ship is rolling. Rim gages at FR 290 (F_y gage) exhibit the largest stress during a rolling condition while the gages at FR 144 (S_y gage) are about half that stress. At FR 258 (H_y gage) the stress is about half of that at the S_y gages.

In head seas the stress is about equal at each of the three hatch locations. All stress values given are maximum peak-to-trough for each thirty-minute period recorded.

Figure 13 presents expanded time-history data for a rolling condition, and Figure 14 is the same for a head sea condition. Logbook data for both conditions are listed in Table VIII. Also included are time histories from Recorder No. 1 for each condition. Note that the highest hatch corner stress occurs at the same time that longitudinal horizontal bending stress and torsional shearing stress are high under both conditions. It appears that horizontal bending and torsion contribute more to the increased stress in the hatch corner than do vertical bending or ship slamming. (Due to the nature of the horizontal bending transducer, some torsion-induced stress is sensed by it.)

Table IX lists the apparent maximum peak-to-trough stress recorded from each element of the rosettes and each rim gage at the same time. Expanded records are also included in Figures 13 and 14.

Included in Table V is a calculated principal stress based on the peak-to-trough data. This table gives the stress in the original orthogonal directions, the principal stress magnitude and its angle with the "A" element. These calculated values are not strictly valid in this case as they are peak-to-trough and do not include the still-water stress component. In each case, the time-history of the highest strain level element of the rosette was scanned visually, and the one highest stress instant determined. Then, the strains in all three elements occurring at that instant were scaled and recorded.

C. Bow Sideshell Stresses

As can be seen in the sets of analog traces given in Figure 15, the bow sideshell stress traces are characterized by unidirectional spikes without any prior buildup or other significant warning.

The highest stresses recorded during the Third Season occurred on Voyage 61 westbound. Maximum values have been scaled and tabulated from oscillograph records from 18 intervals. Logbook data for these are listed in Appendix A, pages 52 and 53. Stress data are presented in Table X. All stresses are measured peak-to-trough. The highest recorded stress, 6,000 psi, was noted twice on Gage B-5 and once on Gage C-2. Expanded time-histories of the analog signals of Interval

31A, B, C are included in Figure 15. The longitudinal vertical bending signal is on each sheet for cross-referencing purposes. Horizontal bending, roll, and pitch signals are included from Recorder No. 1. The measured value of highest stress on the bow plate occurred during the highest vertical bending stress and a simultaneous high pitch excursion. The bow plates exhibit a very low stress profile from ship motion. All increased stress is an impact type occurring when the ship pitches down and the bow is subjected to head seas. Beam, quartering, or following seas have no effect on increased bow stress regardless of ship speed. It should be noted again that during the past recording season, the ship did not encounter the extremes of weather and sea conditions due to the change to a more southerly crossing and reduced speed.

D. Wave Height Measurements

The outputs of two independent wave measuring systems were recorded along with the stress and motion data. (See Figure 16.)

The Tucker wave meter output already has been corrected for ship vertical movement at the pressure ports by accelerometers intrinsic to the Tucker system. Further correction is, nevertheless, necessary since the system is designed for quasi-static use (i.e., ship's speed effects are not accounted for). See Reference 2.

The Ocean Wave Height Radar output is proportional to the slant range from the fixed (relative to the ship) transmit/receive antenna to the wave surface. All ship's motions influence this measurement and it, therefore, must be corrected before the true wave height can be obtained. This manipulation is part of another SL-7 effort (SR-221). Note the flat area in the OWHR trace. This is a result of loss of "lock" in the radar system and results in difficulties when an automated data reduction process involving integration is attempted.

Note also that the two wave measuring systems are located at different points on the vessel and "see" different wave systems.

E. Longitudinal Vertical Bending Stress

As the single most important structural parameter for ship design, the LVB was given special attention in the process of data reduction.

The process outlined in Figure 7 and 8 was used to digitize all Third Season LVB data. The listing resulting from the TAB program is contained in Appendix A. In addition to listing the various values of the first-mode and wave-induced stresses, the listing also presents all environmental conditions for each Third Season interval.

Appendix B contains the results of the parametric studies program, SPLOT. Contained in the plots are graphs of the wave-induced bending stresses for each Beaufort Number. Within each Beaufort Number, the given parameter is sorted into one of five groups of relative wave direction or ship speed. The plotted point is then the mean, RMS, or mean of the 1/3 highest values of the sorted parameter data set. The parameter can be either the maximum or RMS peak-to-trough wave-induced stress within each interval. The summary tables in this Appendix contain, in addition, the number of points in each parameter data set and the standard deviation of the set.

Since these values are based on the data contained on the summary tape in accordance with the format described in Reference 5, no value relating to the maximum value of the original unfiltered signal is available. A program has been developed titled MAX which processes the compacted library tape and computes the difference between the largest positive and most negative value. The results of this program are listed in Appendix C. The designation of the interval is identical to that for the Appendix A listing.

A further processing of LVB stresses by the SPLOT program has been made using the digitized results from all three seasons. For LVB this encompasses over 5000 data interval points for each RMS or maximum peak-to-trough wave-induced stress. Note that in the case of a sort by relative wave direction, all curves lie very close together except for the higher Beaufort Numbers where there is a scarcity of data points. This is to be expected since only the wave-induced stress component is plotted and, if Beaufort Number is considered a reasonable measure of wave height (assuming a fully-developed sea) then the relative wave direction should have little or no influence on the wave-induced stress component.

REFERENCES

1. Boentgen, R.R.; Fain, R.A.; Wheaton, J.W.; First Season Results From Ship Response Instrumentation Aboard the SL-7 Class Containership S.S. SEA-LAND McLEAN in North Atlantic Service; SSC-264, (SL-7-8).
2. Wheaton, J.W.; Boentgen, R. R.; Second Season Results From Ship Response Instrumentation Aboard the SL-7 Class Containership S. S. SEA-LAND McLEAN in North Atlantic Service; Teledyne Materials Research, Waltham, MA., 1975 Technical Report No. 1559 (j).
3. Fain, R.A.; Design and Installation of a Ship Response Instrumentation System Aboard the SL-7 Class Containership S.S. SEA-LAND McLEAN, Report SSC-238 (SL-7-1) 1963.
4. Boentgen, R.R.; Wheaton, J.W.; Static Structural Calibration of Ship Response Instrumentation Aboard the S.S. SEA-LAND McLEAN; Report SSC-263 (SL-7-7).
5. Johnson, A.E., Jr.; Flaherty, J.A., and Walters, I.J.; A Method for Digitizing, Preparing, and Using Library Tapes of Ship Stress and Environmental Data; Report SSC-236, 1973; and Computer Programs for Digitizing and Using Library Tapes of Ship Stress and Environment Data; Report SSC-237, 1973.
6. Statistics on Wave Heights and Periods for the North Atlantic Ocean David Taylor Model Basin R&D Report 1091, September 1957.

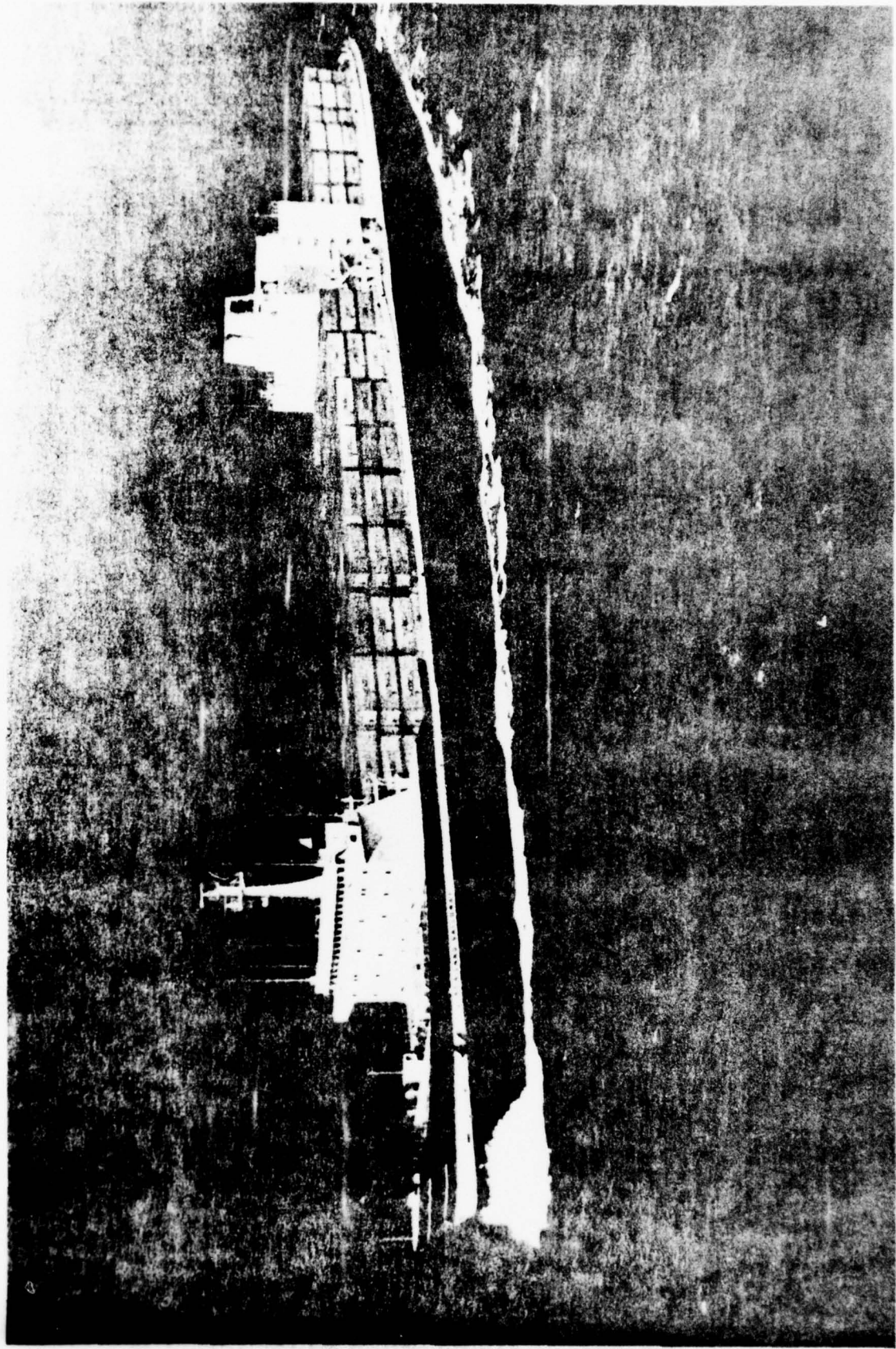


Figure 1. SL-7 Class Containership

Recording	Gage
A Mode	A1,2,3,4,5,6 - B1,2,3,4,5,6
B Mode	B1,2,3,4,5,6 - C1,2,3,4,5,6
C Mode	A1,2,5,6 - B1,2,5,6 - C1,2,3,4
D Mode	Hatch Corners Frames 258 & 290
D Mode Alternate	Hatch Corners Frames 144 & 290

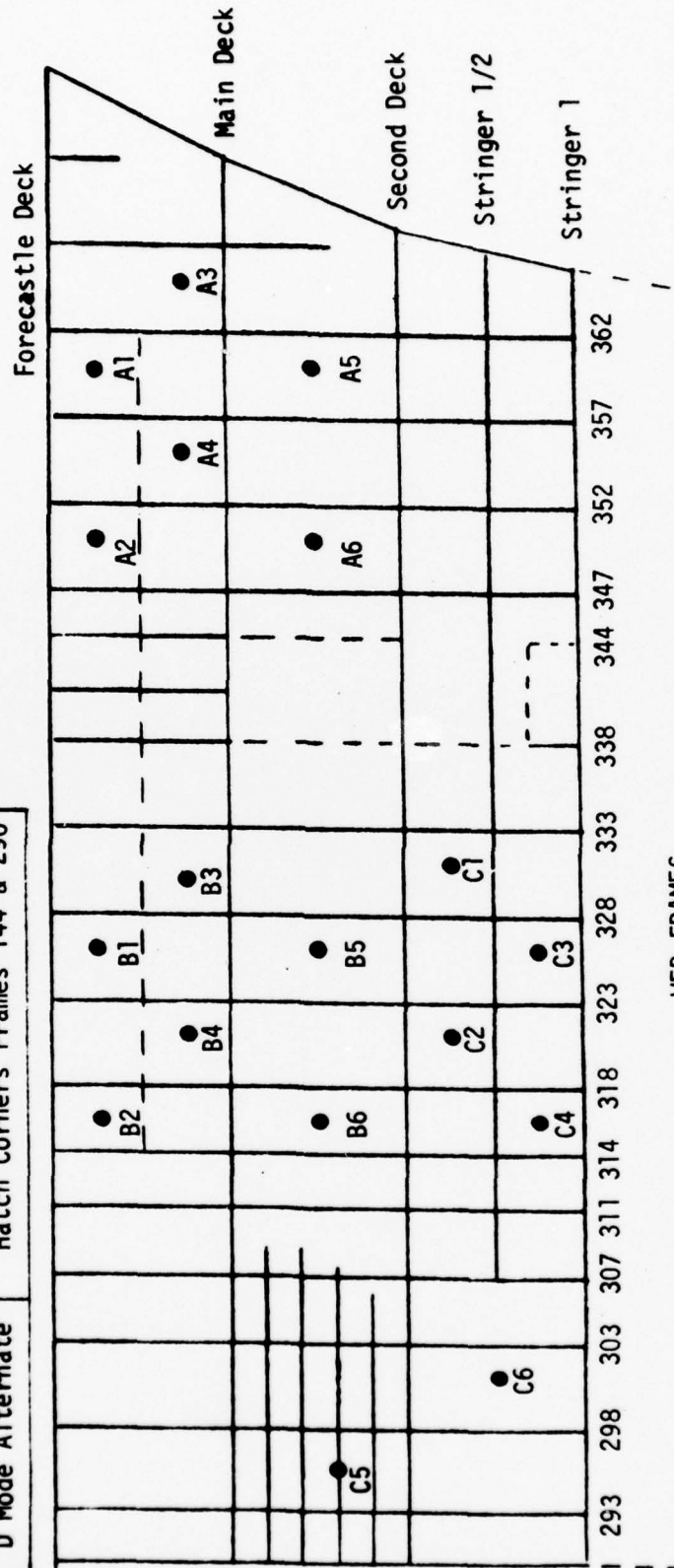


Figure 2
Strain Gage Arrays

Forebody Structure, SS SEA-LAND McLEAN
(Starboard Side Only)

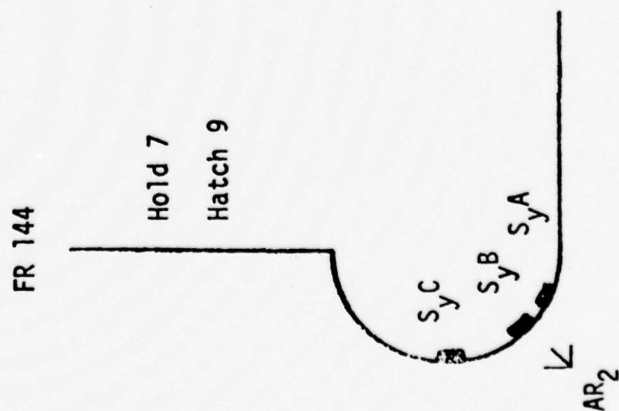
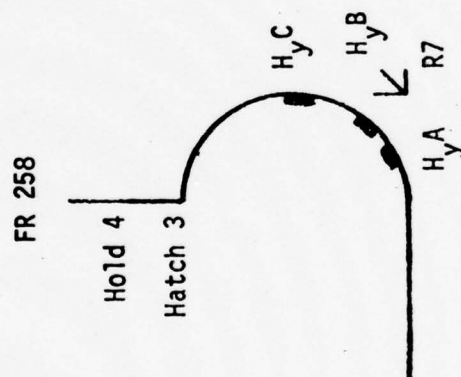
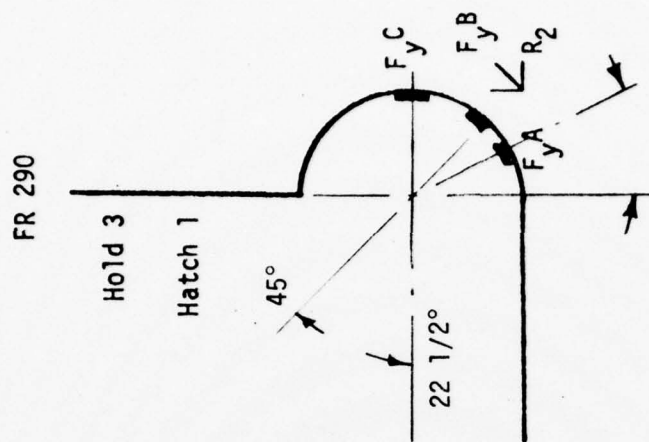


Figure 3

HATCH CORNER STRAIN GAGES

S.S. SEA-LAND McLEAN

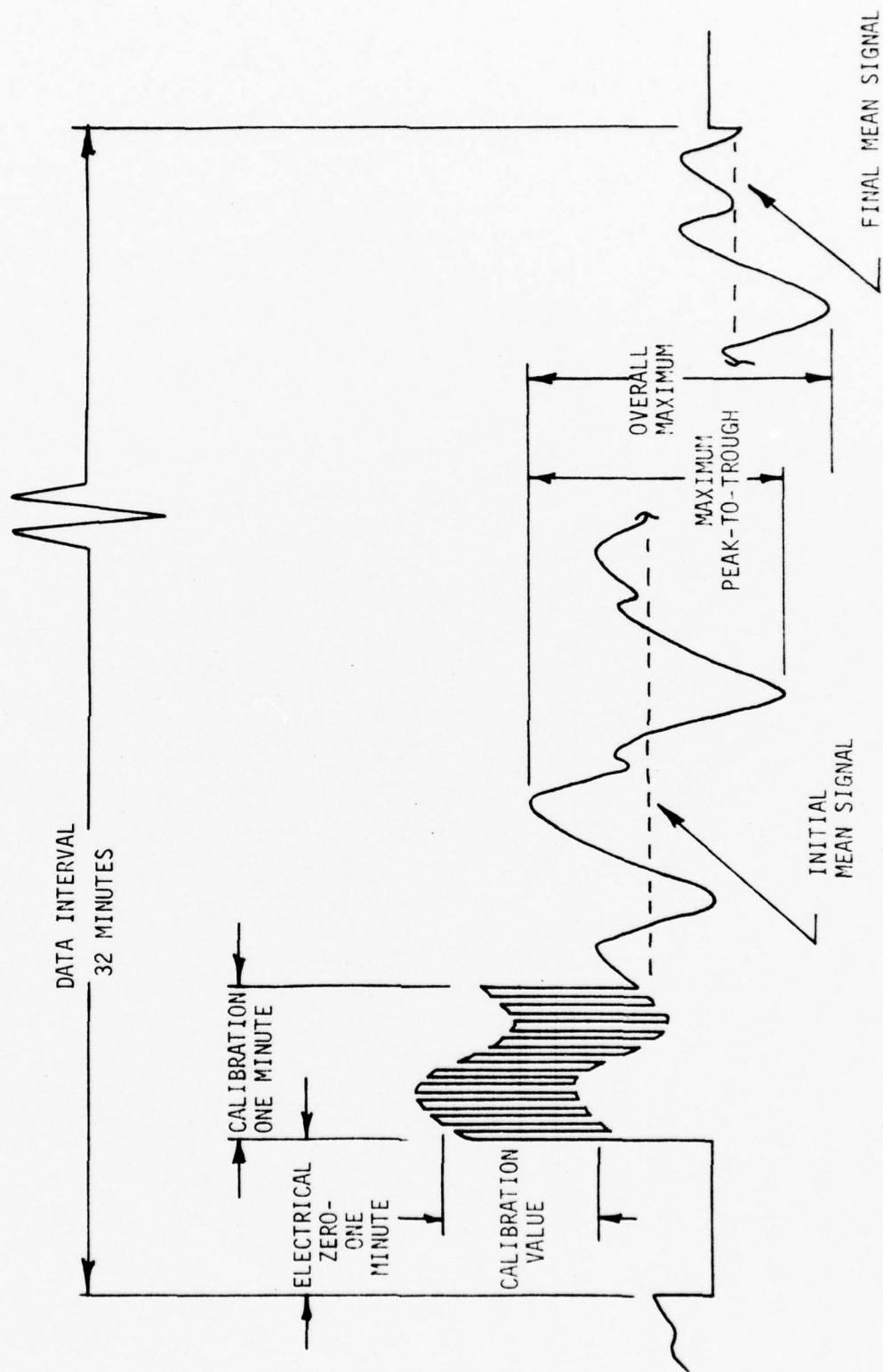
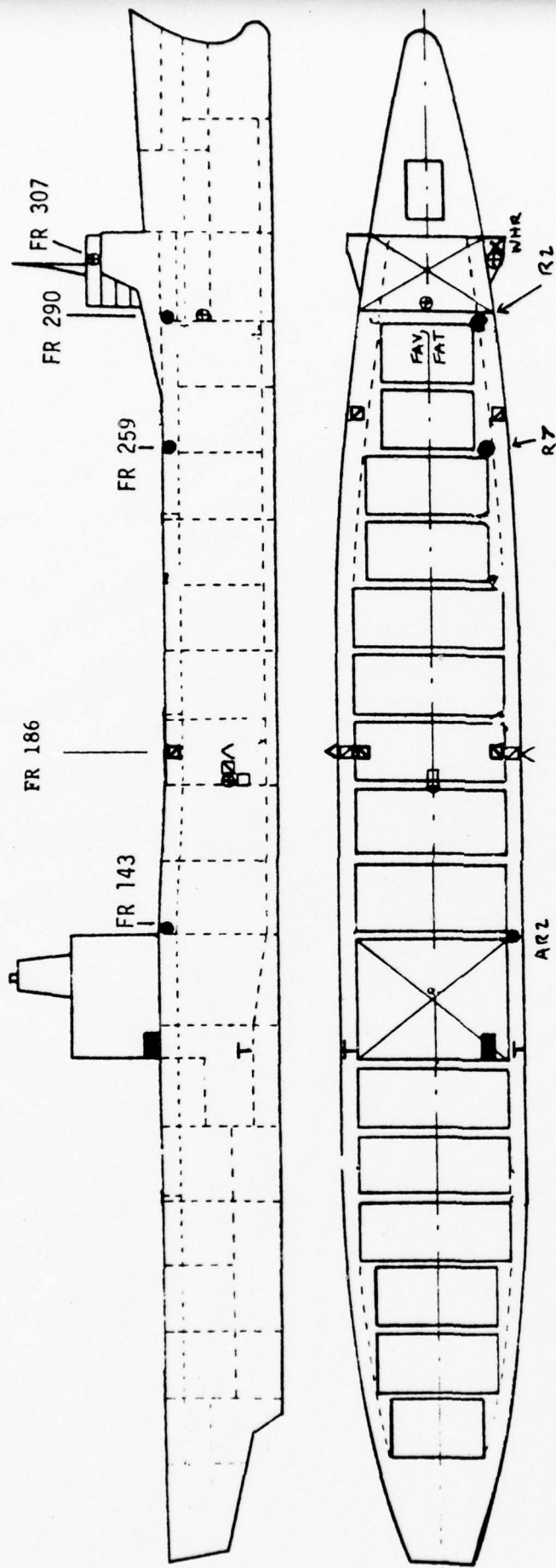


Figure 4. TYPICAL ANALOG DATA INTERVAL RECORD



LEGEND

⊕ Bidirectional Accelerometer

▣ Longitudinal Vertical Bending Element (LVBS, LVBP)

□ Pitch and Roll Pendulum

● Three-Arm Rosette (R, AR)

✕ Wave Height Radar (WHR)

┴ Tucker Wave Meter (TWM)

∧ Midship Torsional Shear Element (TSMP, TSMS)

▣ Longitudinal Horizontal Bending Element (LHBS, LHBP)

FIGURE 5

GENERAL SENSOR LAYOUT

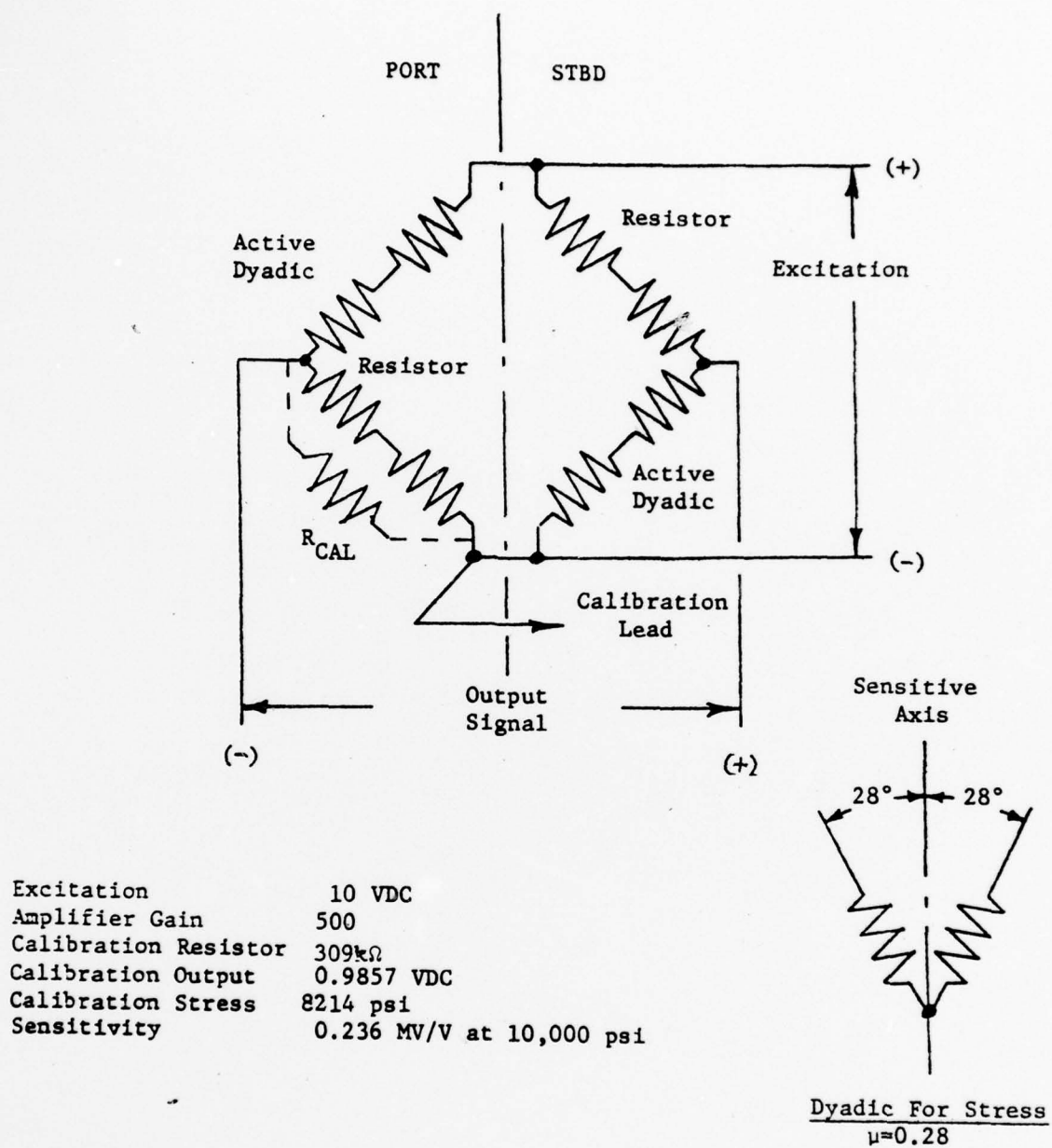


Figure 6. STRAIN GAGE CIRCUIT AS USED FOR LONGITUDINAL VERTICAL BENDING (LVB) STRESS, MIDSHIP AND FORWARD

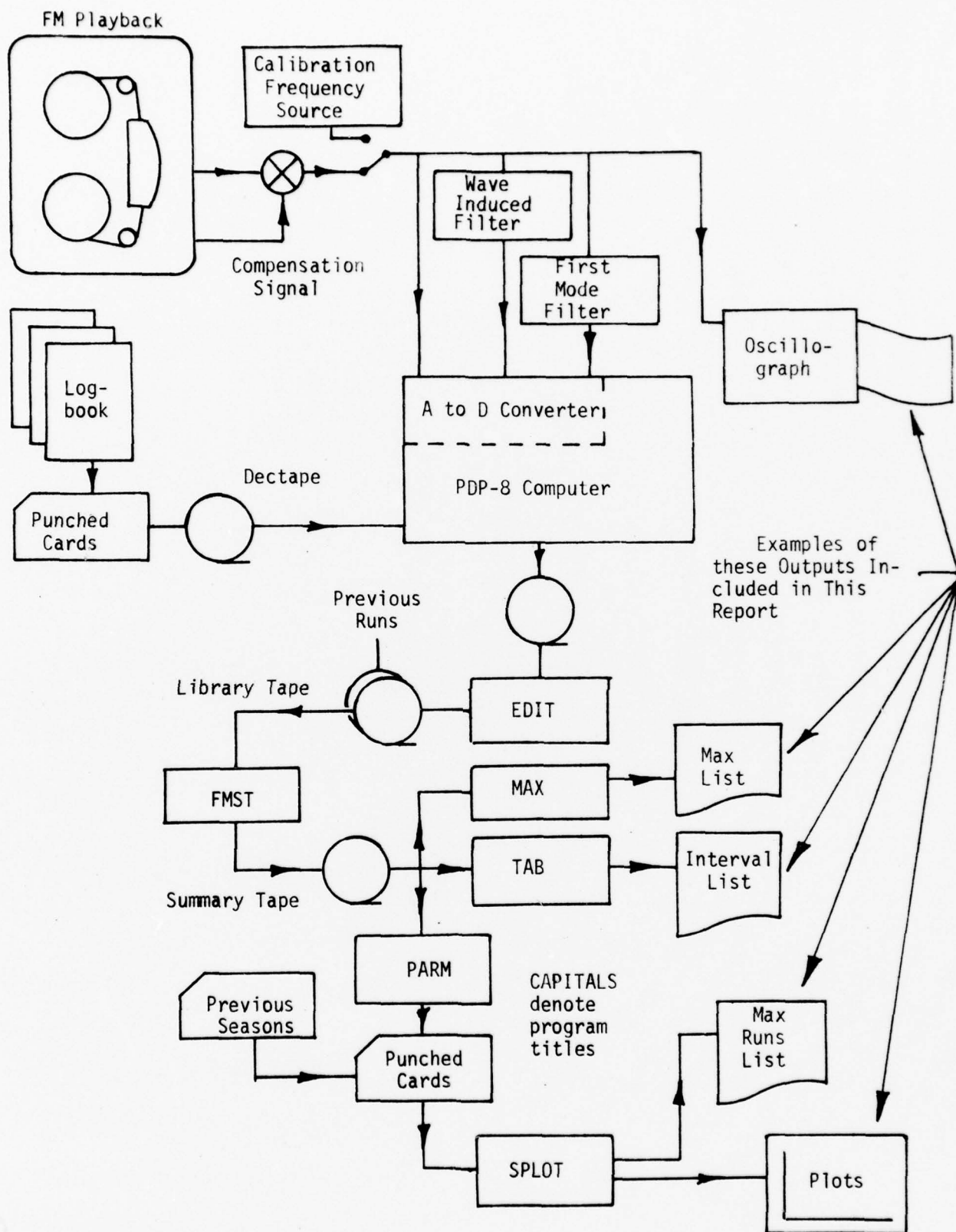


Figure 7. SCHEMATIC OF DATA REDUCTION

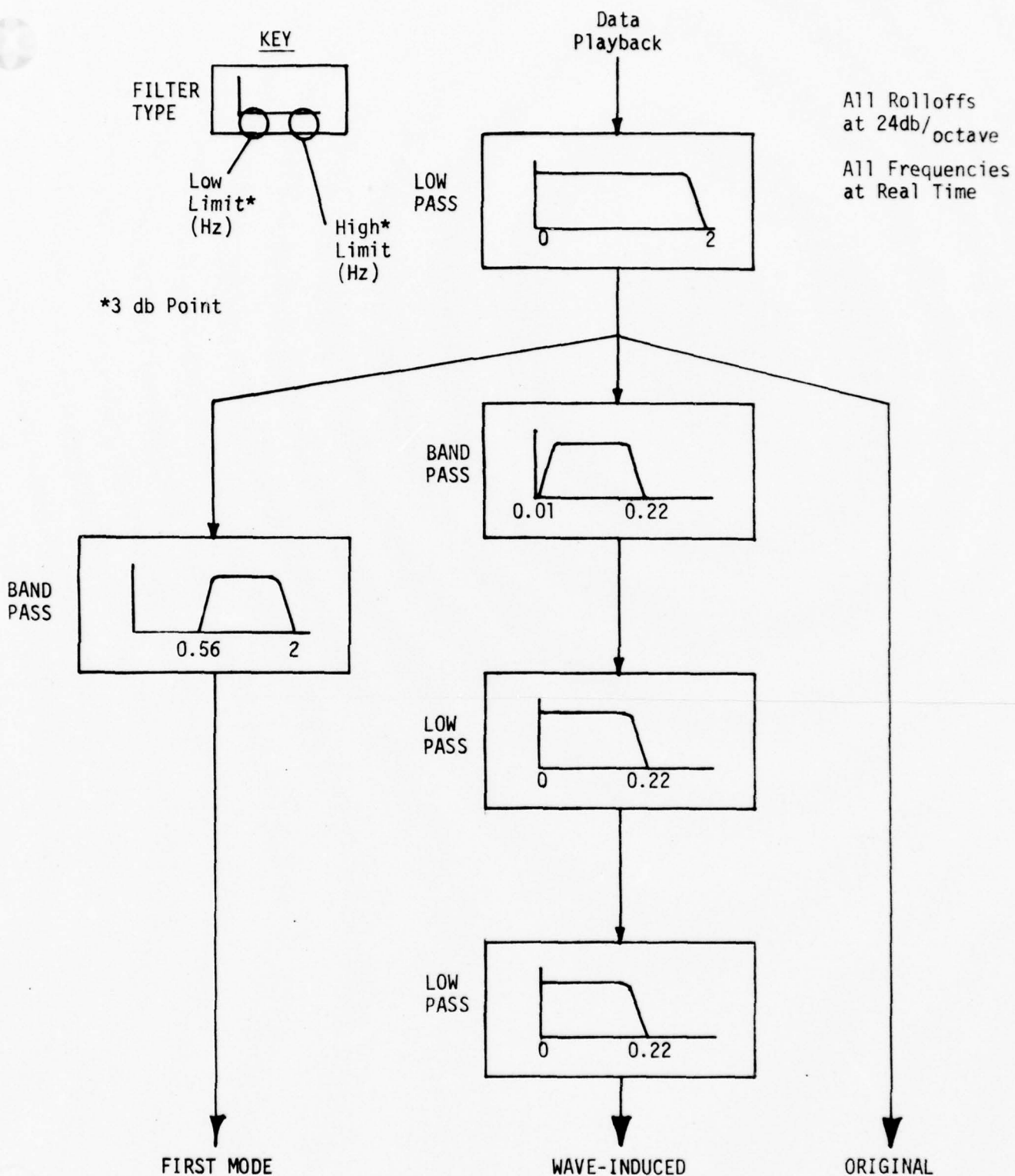


Figure 8. THIRD SEASON SIGNAL FILTERING FOR LVB DIGITIZING

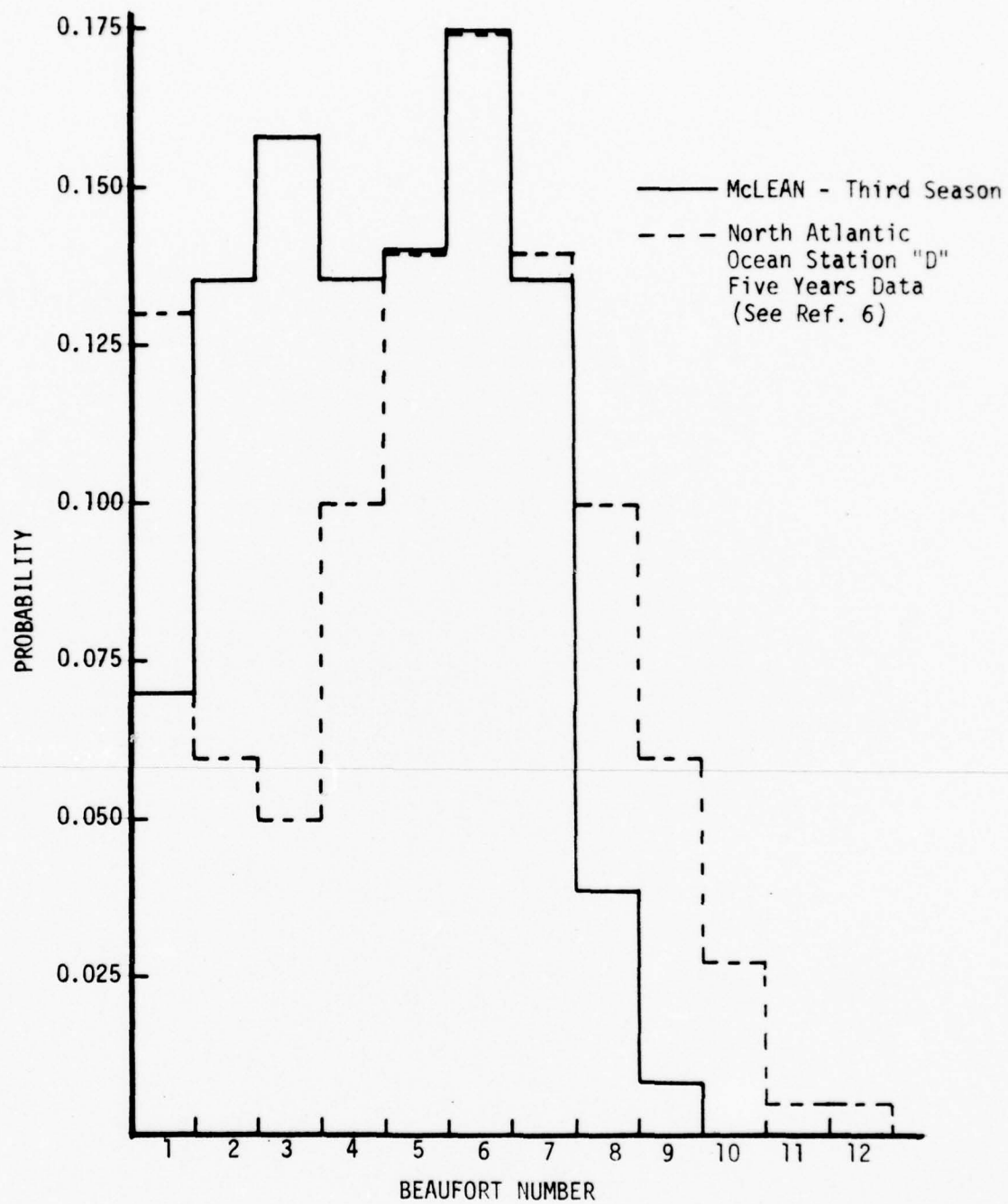


Figure 9 NORMALIZED HISTOGRAM OF
BEAUFORT NUMBERS ENCOUNTERED

RWD = RELATIVE WAVE DIRECTION
P = POINTS USED
O = DENOTES MEAN POINT

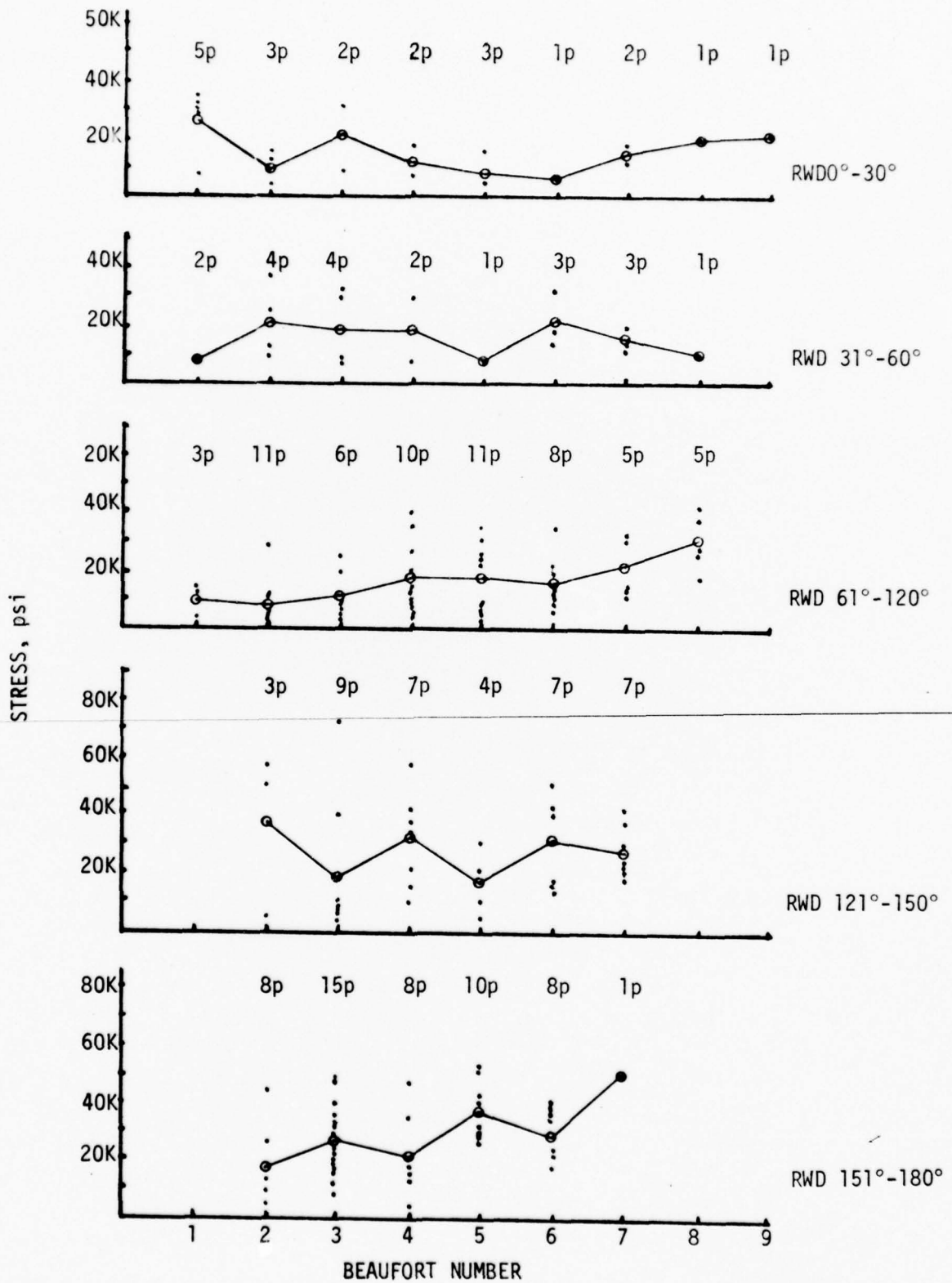


Figure 10A. AVERAGE OF MAXIMUM F_y A STRESS WITHIN EACH INTERVAL

RWD = RELATIVE WAVE DIRECTION
P = POINTS USED
O = DENOTES MEAN POINT

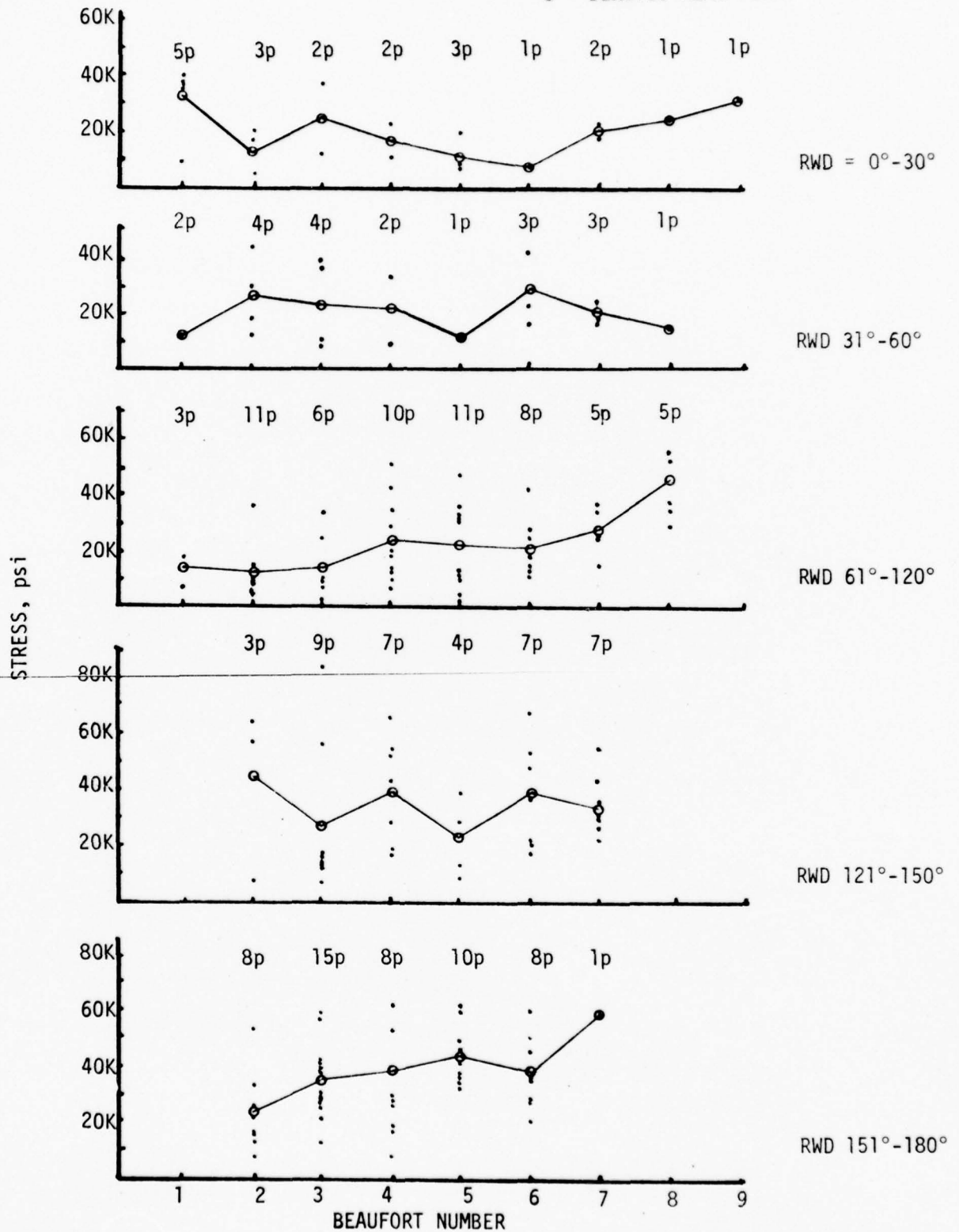


Figure 10B. AVERAGE OF MAXIMUM F_{yB} STRESS WITHIN EACH INTERVAL

RWD = RELATIVE WAVE DIRECTION
P = POINTS USED
O = DENOTES MEAN POINT

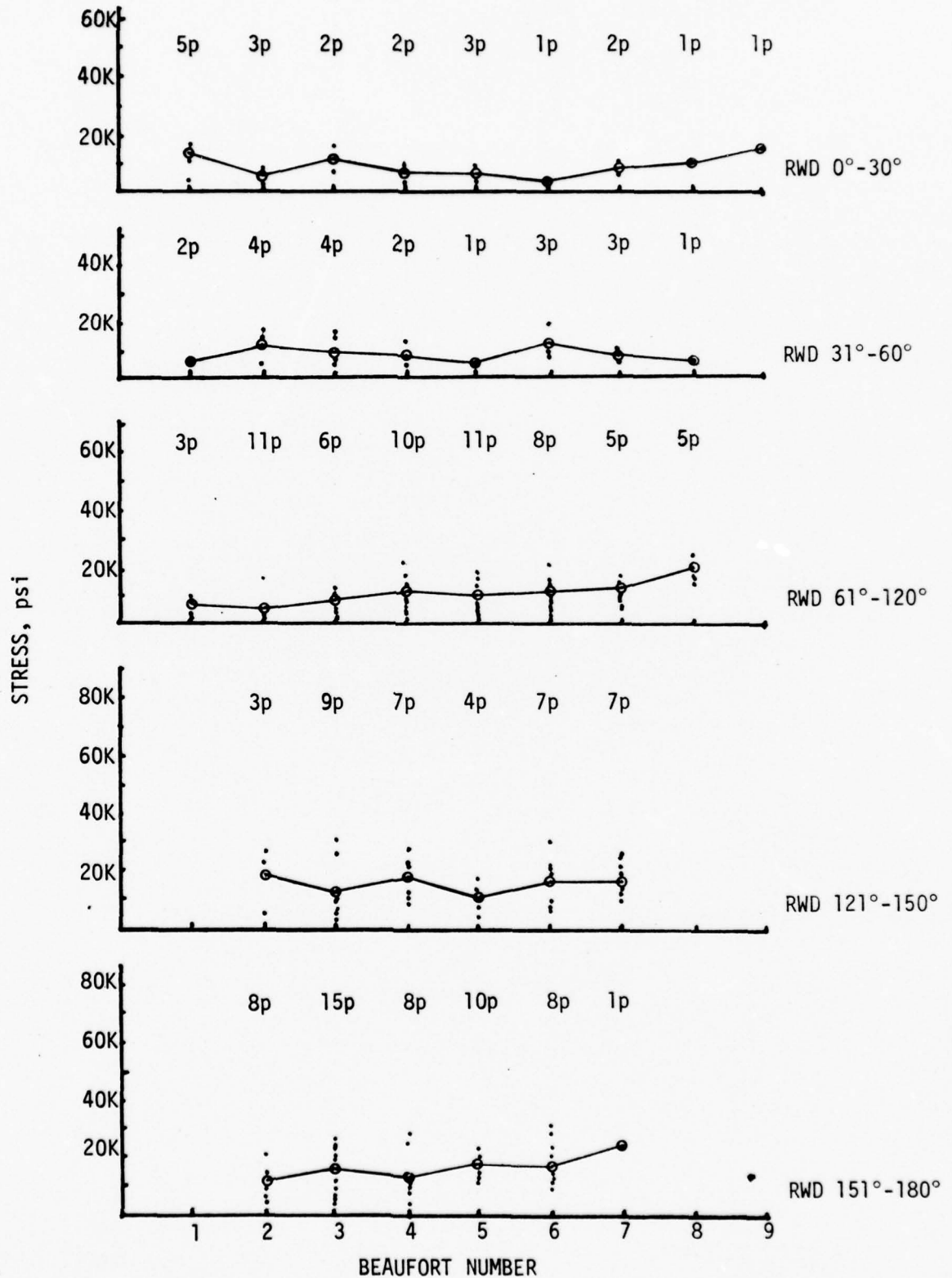
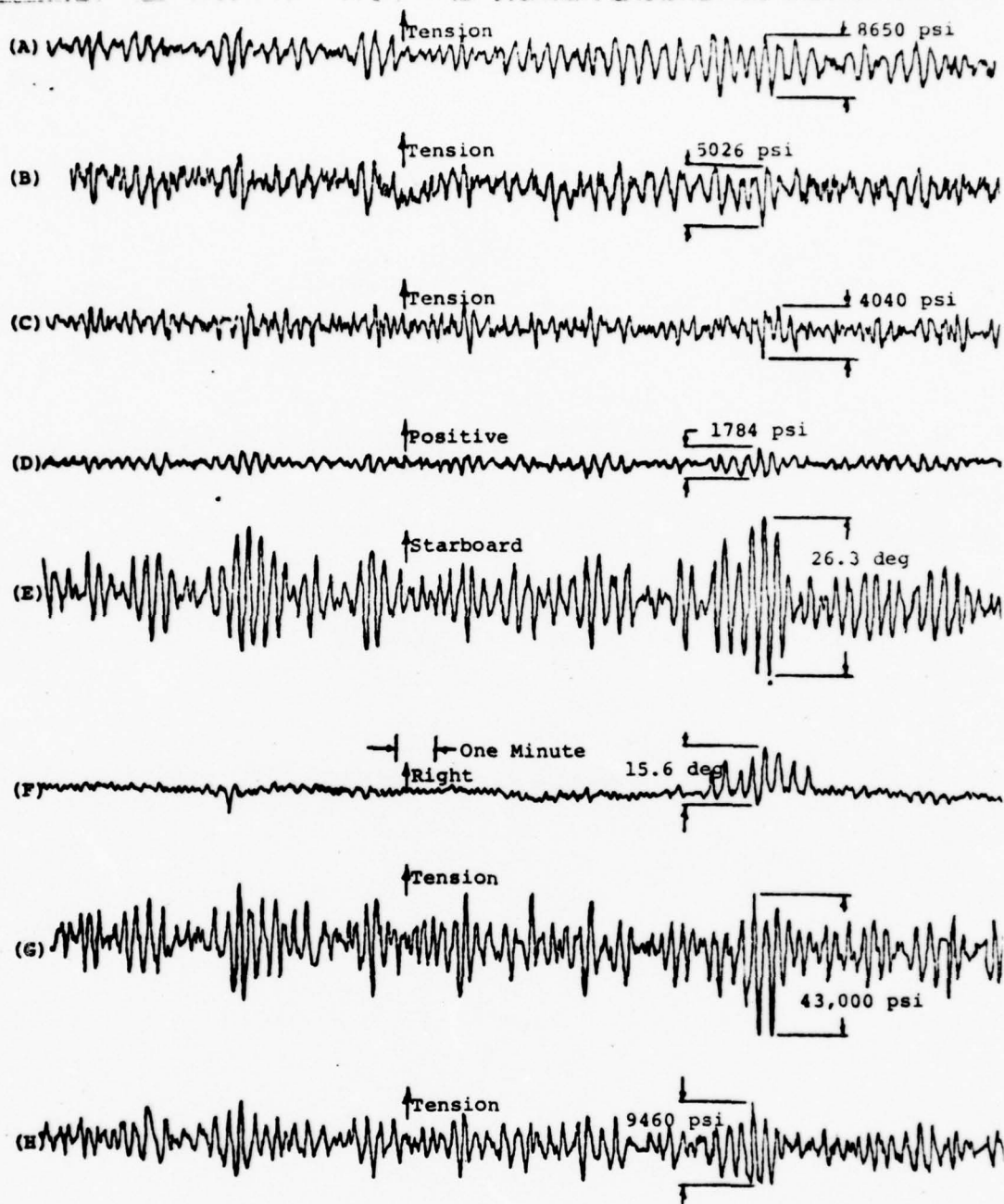


Figure 10C. AVERAGE OF MAXIMUM F_{yC} STRESS WITHIN EACH INTERVAL



Key: (A) Midship Longitudinal Vertical Bending Stress (E) Roll Angle
 (B) Forward Longitudinal Vertical Bending Stress (F) Rudder Angle
 (C) Midship Longitudinal Lateral Bending Stress (G) Hatch Corner Gage FYB
 (D) Torsional Midship Shearing Stress (+ CW Fwd) (H) Hatch Corner Gage FYC

Figure 11. SAMPLE ANALOG TRACES FOR ONE INSTANT OF SHIP RESPONSE TO QUARTERING SEA WITH 3-5 FOOT WAVES AND SWELLS.

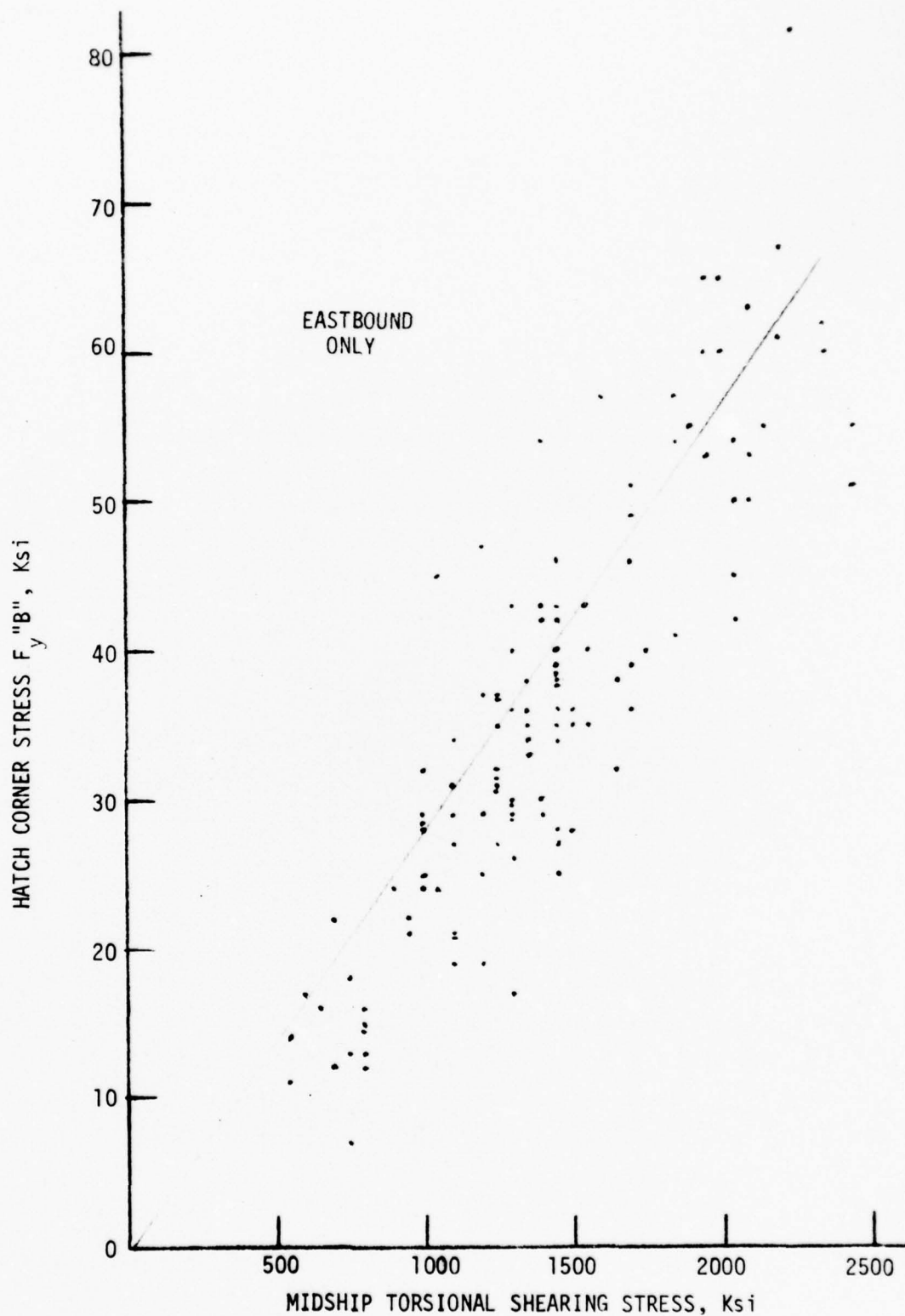


Figure 12A. MAXIMUM F_{yB} STRESS WITHIN EACH INTERVAL VERSUS THE MAXIMUM TSM STRESS WITHIN THE SAME INTERVAL FOR EASTBOUND PASSAGES

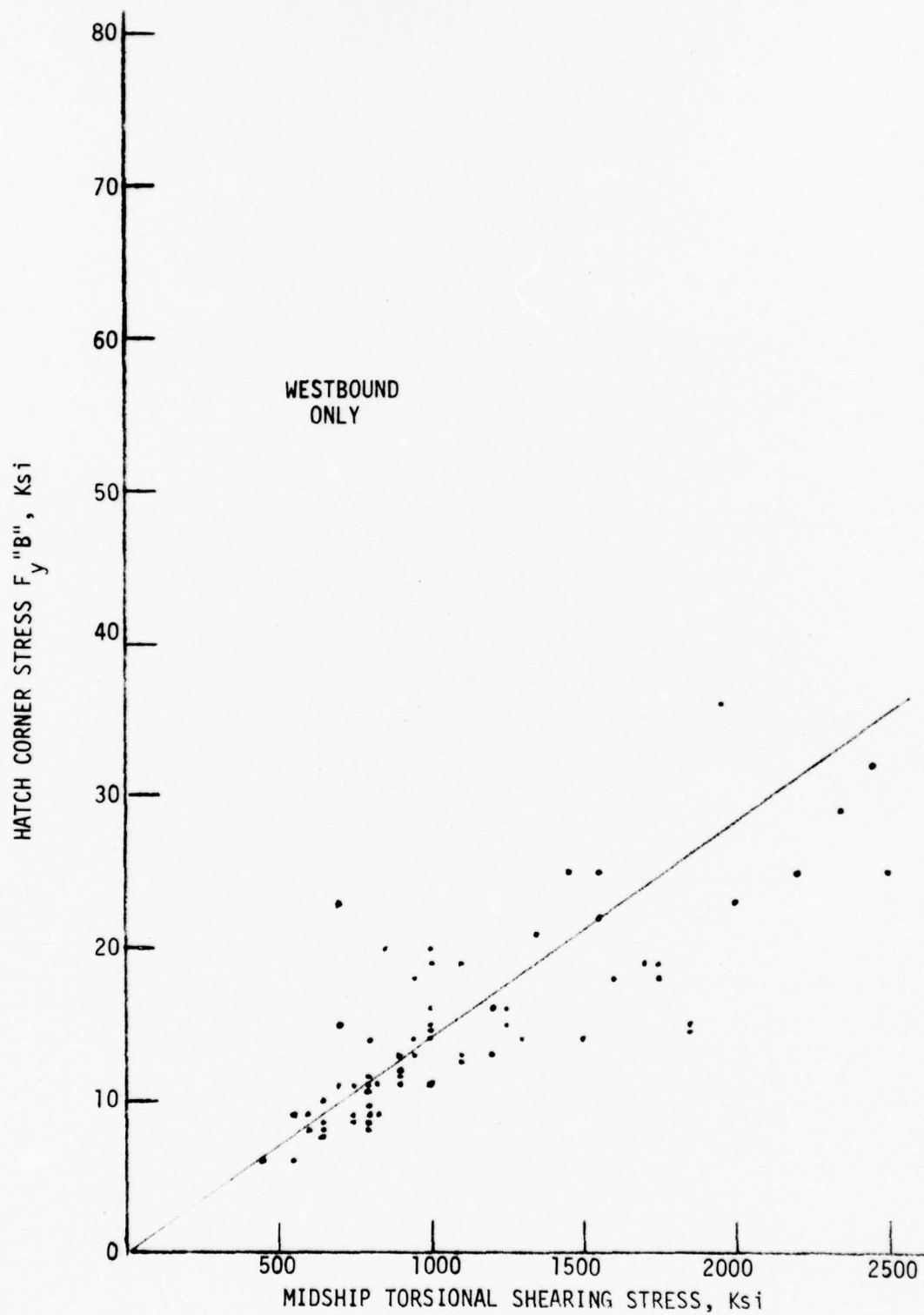


Figure 12B. MAXIMUM F_y STRESS WITHIN EACH INTERVAL VERSUS THE MAXIMUM TSM STRESS WITHIN THE SAME INTERVAL FOR WESTBOUND PASSAGES

Voyage 61 East
Index 12 "D" Mode

Recorder #1
Tape #223

VERTICAL BENDING
HORIZONTAL BENDING
ROLL
PITCH

Recorder #2
Tape #224

VERTICAL BENDING
 R_2 A,B,C Hatch Corner - FR. 290
 F_y A,B,C
 AR_2 A,B,C Hatch Corner - FR 144
 S_y A,B,C

Note: Reference lines denote instant of largest hatch corner stress recorded in interval.

Figure 13

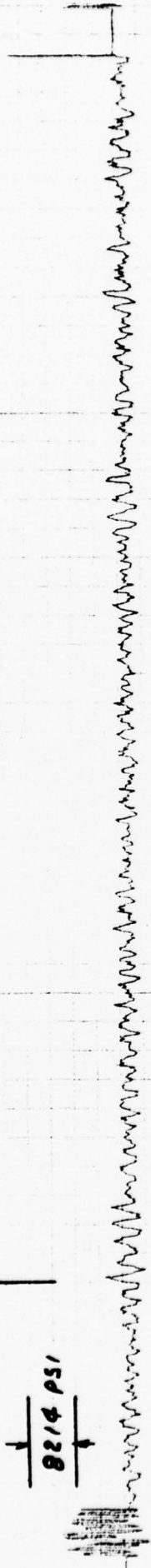
SAMPLE ANALOG TRACES FOR HIGH
HATCH CORNER STRESS-QUARTERING SEAS

8214 PSI



LONGITUDINAL VERTICAL BENDING

8214 PSI



LONGITUDINAL HORIZONTAL BENDING

10°



Roll

10°

1 MINUTE

PITCH

VOYAGE C/E TAP 223 INDEX 12 D

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



R2A

10038 PSI



R2B

10038 PSI

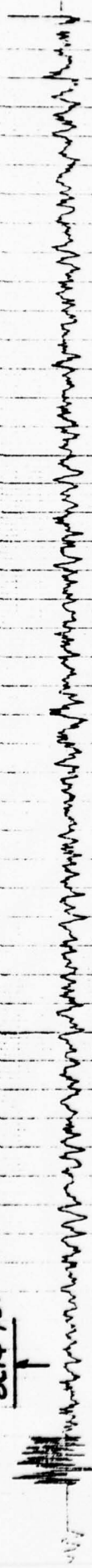
1 minute



R2C

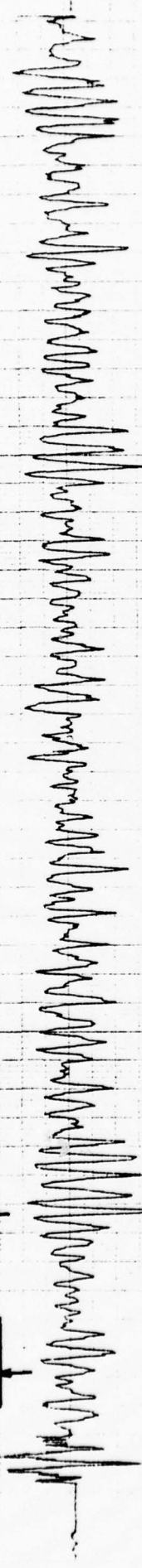
VOYAGE C1E TARE 224 INDEX 12 D

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



FY-A

10038 PSI



FY-B.

10038 PSI



FY-C

1 MINUTE

8219 PSI

LONGITUDINAL VERTICAL BENDING

10038 PSI

AR-2 A

10038 PSI

AR-2 B

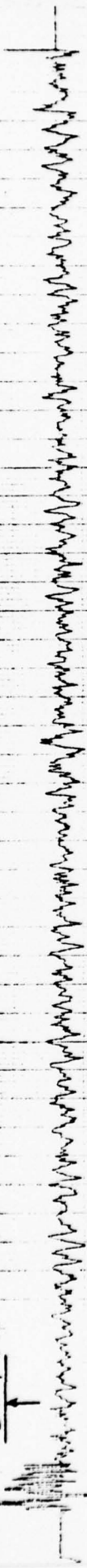
10038 PSI

AR-2 C

1 MINUTE

VOYAGE 61 E TAPE 229 INDEX 12 D

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



SY-A

10038 PSI



SY-B

10038 PSI

1 MINUTE



SY-C

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Voyage 61 West

Index 31 "D" Mode

Recorder #1

Tape #233

VERTICAL BENDING

HORIZONTAL BENDING

ROLL

PITCH

Recorder #2

Tape #234

VERTICAL BENDING

R_2 A,B,C

Hatch Corner FR 290

F_y A,B,C

R A,B,C

7

Hatch Corner FR 258

H_y A,B,C

Note: Reference lines denote instant of largest hatch corner stress recorded in interval.

Figure 14

SAMPLE ANALOG TRACES FOR HIGH HATCH
CORNER STRESSES-BROAD-ON-THE BOW SEAS

8214 PSI



LONGITUDINAL VERTICAL BENDING

8214 PSI



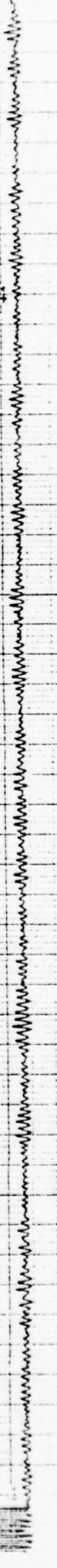
LONGITUDINAL HORIZONTAL BENDING

10°



Roll

10°



PITCH

1 MINUTE

VOYAGE 61 W TAPE 233 INDEX 31 D

8214 PSI

LONGITUDINAL VERTICAL BENDING

10038 PSI

R2 - A

10038 PSI

R2 - B

10038 PSI

1 MINUTE

R2 - C

VOYAGE 61 W TAPE 234 INDEX 31 D

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



FY - A

10038 PSI



FY - B

10038 PSI

1 MINUTE



FY - C

8214 PSI

LONGITUDINAL VERTICAL BEARING

10038 PSI

R7-A

10038 PSI

R7-B

10038 PSI

R7-C

1 MINUTE

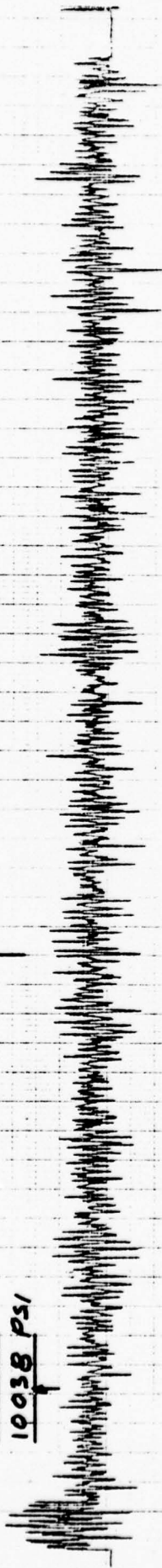
VOYAGE 61 W TAPE 234 INDEX 31 D

0014 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



HY - A

10038 PSI



HY - B

10038 PSI



HY - C

1 MINUTE

Voyage 61 West
Index 31 "A" Mode

Recorder #1	VERTICAL BENDING STRESS
Tape #233	HORIZONTAL BENDING STRESS
	ROLL ANGLE
	PITCH

Recorder #2	VERTICAL BENDING STRESS
	A - 1-6
	Bow Sideshell
	B - 1-6

Note: Reference lines denote instant of largest bow gage stress recorded in interval.

Figure 15A

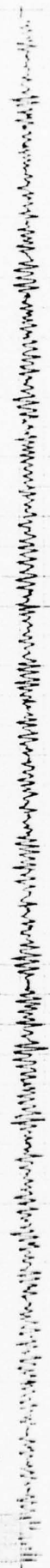
SAMPLE ANALOG TRACES FOR HIGH
SIDESHELL STRESSES-A MODE

8214 PSI



LONGITUDINAL VERTICAL BENDING

8214 PSI



LONGITUDINAL HORIZONTAL BENDING

10°



Roll

10°

1 MINUTE



PITCH

8214 PSI

LONGITUDINAL VERTICAL BENDING

10038 PSI

A-1

10038 PSI

A-2

10038 PSI

A-3

1 MINUTE

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



A-4

10038 PSI



A-5

10038 PSI

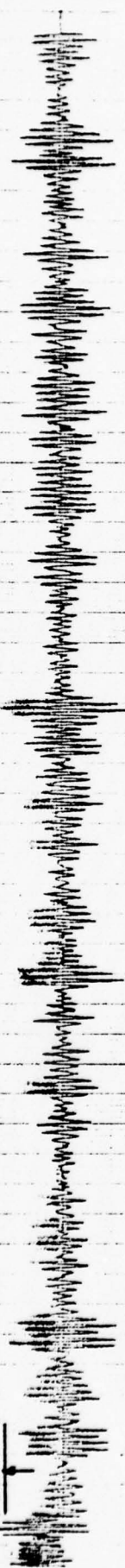


A-6

1 MINUTE

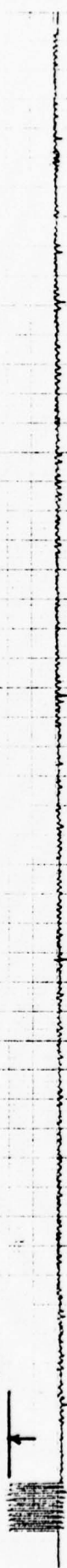
VOYAGE 61 W TAPE 234 INDEX 31 A

8214 PSI



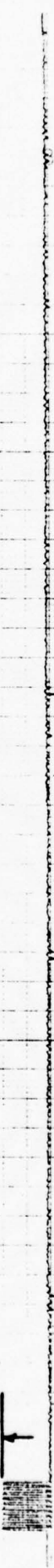
LONGITUDINAL VERTICAL BENDING

10038 PSI



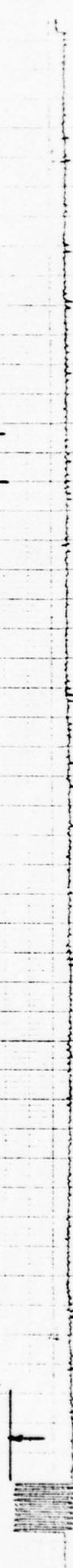
B-1

10038 PSI



B-2

10038 PSI



B-3

1 MINUTE

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



B-4

10038 PSI



B-5

10038 PSI



B-6

1 MINUTE

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Voyage 61 West
Index 31 "B" Mode

Recorder #1

Tape #233

VERTICAL BENDING

HORIZONTAL BENDING

ROLL

PITCH

Recorder #2

Tape #234

VERTICAL BENDING

C 1-6

B 1-6

Bow Sideshell

Note: Reference lines denote instant of largest bow gage stress recorded in interval.

Figure 15B

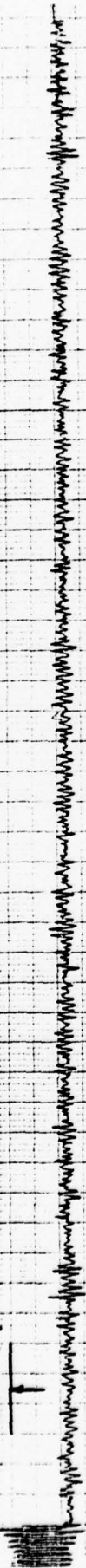
SAMPLE ANALOG TRACES FOR HIGH
SIDESHELL STRESSES-B MODE

80.4 PSI



LONGITUDINAL VERTICAL BENDING

82.9 PSI



LONGITUDINAL HORIZONTAL BENDING

10°



Roll

10°

1 MINUTE



PITCH

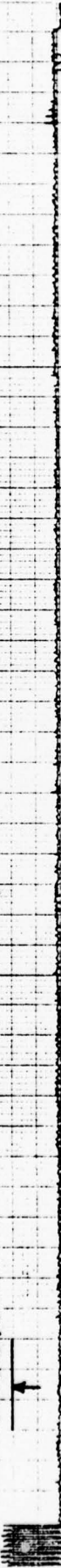
VOYAGE 6145 TAPE 233 INDEX 318

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



C-1

10038 PSI



C-2

10038 PSI

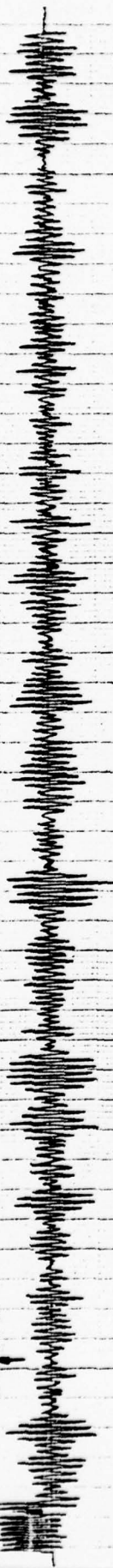


C-3

1 MINUTE

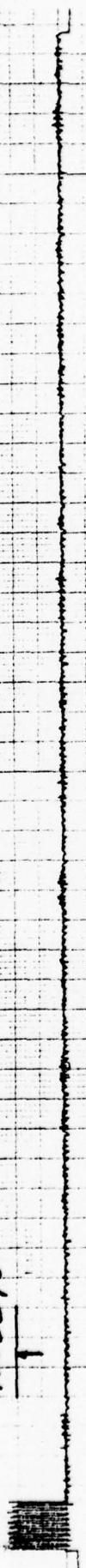
VOYAGE 61 W TAPE 234 INDEX 31 B

8214 PSI



LONGITUDINAL VERTICAL BENDING

10030 PSI



C-4

10030 PSI



C-5

10030 PSI



1 MINUTE

C-6

VOYAGE 61 US TAPE 234 INDEX 31 B

8217 PSI



LONGITUDINAL VERTICAL BENDING

10030 PSI



B-1

10038 PSI



B-2

10038 PSI



B-3

1 MINUTE

2-14 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



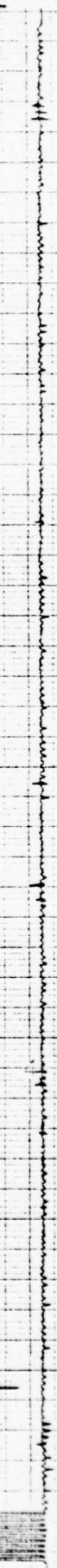
B-4

10038 PSI



B-5

10038 PSI



B-6

1 MINUTE

VOYAGE 61 W TAPE 254

INDEX 31 B

Voyage 61 West
Index 31 "C" Mode

Recorder #1
Tape #233

VERTICAL BENDING
HORIZONTAL BENDING
ROLL
PITCH

Recorder #2
Tape #234

VERTICAL BENDING
C 1-4
A 1,2,5,6
B 1,2,5,6 Bow Sideshell

Note: Reference lines denote instant of largest bow gage stress recorded in interval.

Figure 15C

SAMPLE ANALOG TRACES FOR HIGH
SIDESHELL STRESSES-C MODE

8214 PSI



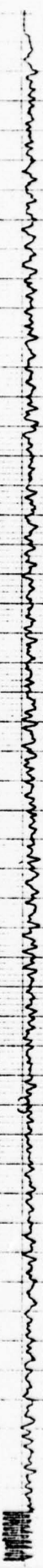
LONGITUDINAL VERTICAL BENDING

8214 PSI



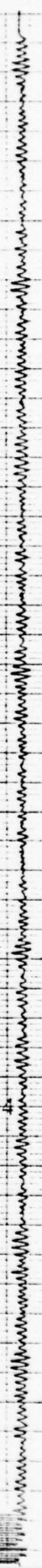
LONGITUDINAL HORIZONTAL BENDING

10°



Roll

10°



Pitch

1 MINUTE

8214 PSI

LONGITUDINAL VERTICAL BENDING

10038 PSI

C-1

10038 PSI

C-2

10038 PSI

C-3

1 MINUTE

VOYAGE 61 W TAPE 234 INDEX 31 C

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



C-4

10038 PSI



A-1

10038 PSI



1 MINUTE

A-2

VOYAGE C1 W TAPE 239 INDEX 31 C

8219 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



B-1

10038 PSI



B-2

10038 PSI



1 MINUTE

A-5

8214 PSI



LONGITUDINAL VERTICAL BENDING

10038 PSI



A-6

10038 PSI



B-5

10038 PSI



1 MINUTE

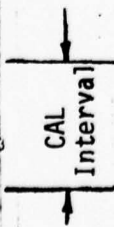
B-6

VOYAGE 61 W TAPE 234 INDEX 31 C

Ocean Wave Height Radar (Slant Range)



Radar Vertical Acceleration



Radar Transverse Acceleration



Positive Time

Tucker Wave-Meter Output



Roll Angle



Pitch Angle

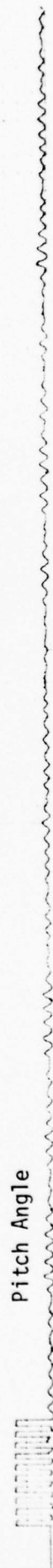


Figure 16. TYPICAL ANALOG TRACES OF DATA REQUIRED FOR WAVE HEIGHT DETERMINATION (RECORDER NO. 1, TAPE 233, INDEX 1A)

APPENDIX A

LISTING OF ENVIRONMENTAL CONDITIONS AND LONGITUDINAL VERTICAL BENDING STRESS FOR EACH DIGITIZED THIRD SEASON INTERVAL

This appendix is a result of the TAB program, a part of the process of preparing digital library tapes. The column headings and listing are generally self-explanatory. Note, however, that all the azimuths are measured in degrees and relative directions are measured with zero as the vessel heading. The column labeled "Sea State" lists the Beaufort Number observation. Note also that the stresses listed refer only to the wave-induced or first mode components.

The listing, as used here, serves two purposes; first to list the various combinations of environmental conditions encountered and second to list the various LVB stress levels generated by these conditions. It is expected that the listing will be used to locate specific intervals of interest for further data reduction by investigators.

ANALOG LOGBOOK TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME SAT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPH	REL WIND DIR	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BUSTS	COMMENTS
MCLEAN201 002	59E 05	01-17-75	1030			078	31.7	04	15	01		123P	0800	43	PT CLDY	159	1347	505	1	703 0
MCLEAN201 002	59E 06	01-17-75	0800			078	31.7	04	15	01		123P	0800	43	PT CLDY	159	1523	578	1	673 -879
MCLEAN201 002	59E 07	01-17-75	0600			078	31.7	04	15	01		123P	0800	43	PT CLDY	140	2065	900	0	0 -638
MCLEAN201 002	59E 08	01-17-75	0400			076	31.7	04	15	01		123P	0800	43	PT CLDY	99	3544	1230	0	0 -616
MCLEAN201 003	59E 09	01-17-75	1400			078	31.9	05	20	03		135P	0800	46	PT CLDY	74	3023	1360	3	ROLLING 10 STBD -4 -682
MCLEAN201 004	59E 12	01-17-75	1230			090	31.9	05	20	03		135P	0800	46	PT CLDY	72	4313	2219	5	ROLLING 10 STBD -4 -550
MCLEAN201 004	59E 13	01-17-75	1030			090	31.9	05	20	03		135P	0800	46	PT CLDY	42	3449	1325	2	739 668
MCLEAN201 004	59E 14	01-17-75	1030			090	31.9	05	20	03		135P	0800	46	PT CLDY	73	3244	1530	0	0 761
MCLEAN201 004	59E 15	01-17-75	1030			090	31.9	05	20	03		135P	0800	46	PT CLDY	74	3913	1772	0	0 754
MCLEAN201 004	59E 16	01-17-75	1030			090	31.9	05	20	03		135P	0800	46	PT CLDY	62	5435	2014	0	0 1142
MCLEAN201 005	59E 17	01-17-75	1030			090	31.9	05	20	03		133P	0800	46	PT CLDY	53	3643	3266	7	827 563
MCLEAN201 005	59E 18	01-17-75	2030			090	31.9	05	20	03		133P	0800	46	PT CLDY	45	6225	3632	2	695 1032
MCLEAN201 005	59E 19	01-17-75	2030			090	31.9	05	20	03		133P	0800	46	PT CLDY	40	7034	2451	0	0 593
MCLEAN201 005	59E 20	01-17-75	2030			090	31.9	05	20	03		133P	0800	46	PT CLDY	43	5021	2548	0	0 642
MCLEAN201 006	59E 21	01-17-75	2430			090	31.9	05	20	03		135P	0800	46	PT CLDY	58	6884	3219	10	878 1032
MCLEAN201 006	59E 22	01-17-75	2430			090	31.9	05	20	03		135P	0800	46	PT CLDY	50	7368	3200	12	1105 673

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ANALOG TAPE NUMBER	LCRBUCK INDEX NUMBER	DATE	TIME GMT	LATITUDE	SHIPS COURSE	PROP RPM	SEA STATE	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	SWELL LENGTH FEET	SWELL HT FEET	SWELL DIR	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS	
---WAVE IND--- 1ST MODE																					
MCLEAN201	006	01-17-75	2400	37-06 N	090	126.0	112P	112P	03		135P	0800	70	PT CLDY		56	7397	2966	7	849	
59E	23				069-54 W	30.0	07	30	03		004	10202	049								
MCLEAN201	006	01-17-75	2400	37-06 N	090	126.0	112P	112P	03		135P	0800	70	PT CLDY		61	5031	2592	3	776	1032
59E	24				069-54 W	30.0	07	30	03		004	10202	049								
MCLEAN201	007	01-18-75	0400	37-06 N	090	125.7	112P	112P	03		135P	0800	63	OCAST		67	4702	2380	1	703	739
59E	25				069-54 W	29.6	07	30	03		004	10301	050								
MCLEAN201	007	01-18-75	0400	37-06 N	090	125.7	112P	112P	03		135P	0800	63	OCAST		60	7126	3054	2	1120	234
59E	26				069-54 W	29.8	07	30	03		004	10301	050								
MCLEAN201	007	01-18-75	0400	37-06 N	090	125.7	112P	112P	03		135P	0800	63	OCAST		60	4643	2292	0	0	820
59E	27				069-54 W	29.8	07	30	03		004	10301	050								
MCLEAN201	007	01-18-75	0400	37-06 N	090	125.7	112P	112P	03		135P	0800	63	OCAST		47	5771	2863	0	0	769
59E	28				069-54 W	29.8	07	30	03		004	10301	050								
MCLEAN201	008	01-18-75	0800	37-06 N	090	127.0	135P	135P	03		135P	0800	67	OCAST		44	9360	3947	1	703	804
59E	29				069-54 W	30.9	07	30	03		005	10286	052								
MCLEAN201	008	01-18-75	0800	37-06 N	090	127.0	135P	135P	03		135P	0800	67	OCAST		44	7719	4108	0	0	765
59E	30				069-54 W	30.9	07	30	03		005	10286	052								
MCLEAN201	009	01-18-75	1200	37-06 N	090	127.0	135P	135P	03		135P	0800	67	OCAST		52	6190	3303	4	827	739
59E	31				069-54 W	30.9	07	30	03		005	10286	052								
MCLEAN201	009	01-18-75	1200	37-06 N	090	127.0	135P	135P	03		135P	0800	67	OCAST		51	7160	3420	2	1010	693
59E	32				069-54 W	30.9	07	30	03		005	10286	052								
MCLEAN201	009	01-18-75	1200	37-06 N	090	126.6	135P	135P	03		135P	0800	65	PT CLDY		42	8789	4116	0	0	1069
59E	33				069-54 W	30.6	07	30	03		006	10302	054								
MCLEAN201	009	01-18-75	1200	37-06 N	090	126.6	135P	135P	03		135P	0800	65	PT CLDY		50	7492	3574	0	0	798
59E	34				069-54 W	30.6	07	30	03		006	10302	054								
MCLEAN201	009	01-18-75	1200	37-06 N	090	126.6	135P	135P	03		135P	0800	65	PT CLDY		31	8433	4416	0	0	739
59E	35				069-54 W	30.6	07	30	03		006	10302	054								
MCLEAN201	009	01-18-75	1200	37-06 N	090	126.6	135P	135P	03		135P	0800	65	PT CLDY		43	7346	3766	2	732	1459
59E	36				069-54 W	30.6	07	30	03		006	10302	054								
MCLEAN201	010	01-18-75	1600	36-54 N	090	127.3	090P	090P	04		135P	0800	64	PT CLDY		50	7693	3532	2	732	1784
59E	37				069-13 W	31.0	07	30	04		006	10311	057								
MCLEAN201	010	01-18-75	1600	36-54 N	090	127.3	090P	090P	04		135P	0800	64	PT CLDY		47	11928	4513	5	627	1292
59E	38				069-13 W	31.0	07	30	04		006	10311	057								

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ANALOG LOGBOOK TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROP RPM	SEA STATE	REL WIND DIR	REL WAVE PD	REL WAVE DIR	REL WAVE SECS	REL WAVE HT	SWELL HT	SWELL FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS
MCLEAN201 010	59E 39	01-18-75	1600	36-54 N	055-18 W	090	127.3	090P	07	30	04			135P 0600	006	10311	057	50	9411	4013	1018	1303
MCLEAN201 010	59E 40	01-18-75	1600	36-54 N	055-18 W	090	127.3	090P	07	30	04			135P 0600	006	10311	057	56	10290	3889	961	850
MCLEAN201 011	59E 41	01-18-75	2000	36-54 N	053-18 W	080	127.0	125P	07	30	04			125P 0600	006	03016	057	49	7705	4035	908	834
MCLEAN201 011	59E 42	01-18-75	2000	36-54 N	055-18 W	080	127.0	125P	07	30	04			125P 0600	006	03016	057	55	3291	3933	1120	820
MCLEAN201 011	59E 43	01-18-75	2000	36-54 N	055-18 W	080	127.0	125P	07	30	04			125P 0600	006	03016	057	44	9521	4775	1237	765
MCLEAN201 011	59E 44	01-18-75	2000	36-54 N	055-18 W	080	127.0	125P	07	30	04			125P 0600	006	03016	057	52	9711	3991	1164	769
MCLEAN201 012	59E 45	01-18-75	2400	36-54 N	055-18 W	080	126.7	125P	07	30	05			125P 0600	008	10322	049	56	9111	3754	1098	651
MCLEAN201 012	59E 46	01-18-75	2400	36-54 N	055-18 W	080	126.7	125P	07	30	05			125P 0600	008	10322	049	53	9859	4606	1831	860
MCLEAN201 012	59E 47	01-18-75	2400	36-54 N	055-18 W	080	126.7	125P	07	30	05			125P 0600	008	10322	049	57	9254	3801	791	754
MCLEAN201 012	59E 48	01-18-75	2400	36-54 N	055-18 W	080	126.7	125P	07	30	05			125P 0600	008	10322	049	54	9301	4160	1127	871
MCLEAN201 013	59E 49	01-19-75	0400	36-54 N	055-18 W	080	126.7	035P	06	25	04			125P 0600	006	10331	053	47	9509	4000	961	765
MCLEAN201 013	59E 50	01-19-75	0400	36-54 N	055-18 W	080	126.7	035P	06	25	04			125P 0600	006	10331	053	51	7800	3896	966	729
MCLEAN201 013	59E 51	01-19-75	0400	36-54 N	055-18 W	080	126.7	035P	06	25	04			125P 0600	006	10331	053	43	11821	5230	988	1115
MCLEAN201 013	59E 52	01-19-75	0400	36-54 N	055-18 W	080	126.7	035P	06	25	04			125P 0600	006	10331	053	46	8232	3034	717	673
MCLEAN201 014	59E 53	01-19-75	0600	36-54 N	055-18 W	080	126.7	125P	06	25	03			125P 0600	005	10342	051	60	7420	3024	1062	1003
MCLEAN201 014	59E 54	01-19-75	0600	36-54 N	055-18 W	080	126.7	125P	06	25	03			125P 0600	005	10342	051	46	8380	3479	966	585

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ANALOG LOGBOOK		TRIP INTERVAL		TIME	LATITUDE	SHIP'S COURSE	SHIP'S SPEED	SEA STATE	REL WIND DIR	REL WAVE DIR	REL WAVE SECS	SWELL LENGTH	SWELL DIR	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	MEAN STRESS PSI	COMMENTS
INDEX	NUM	DATE	GMT				KTS					FEET		HT							
---WAVE IND--- 1ST MODE																					
MCLEAN201	014	01-19-75	0800	30-54 N	080	126.8	30.7	06	25	03		125P	0600	04	OCAS	57	6833	2841	4	864	915
MCLEAN201	014	01-19-75	0800	30-54 N	080	126.8	30.7	06	25	03		125P	0600	04	OCAS	49	8137	4445	8	791	703
MCLEAN201	015	01-19-75	1200	30-26 N	080	083.0	20.3	06	25	03		125P	0600	03	OCAS	67	8903	4350	0	0	1875
MCLEAN201	015	01-19-75	1200	30-26 N	080	083.0	20.3	06	25	03		125P	0600	03	OCAS	64	7463	3706	0	0	1853
MCLEAN201	015	01-19-75	1200	30-26 N	080	083.0	20.3	06	25	03		125P	0600	03	OCAS	67	8056	3175	0	0	1882
MCLEAN201	015	01-19-75	1200	30-26 N	080	083.0	20.3	06	25	03		125P	0600	03	OCAS	63	9673	4592	2	793	1926
MCLEAN203	016	01-19-75	1600	30-26 N	080	083.0	20.3	03	10	02		125P	0600	02	PT CLOY	67	6259	3515	0	0	0
MCLEAN203	016	01-19-75	1600	30-26 N	080	083.0	20.3	03	10	02		125P	0600	02	PT CLOY	61	7958	4148	0	0	7
MCLEAN203	016	01-19-75	1600	30-26 N	080	083.0	20.3	03	10	02		125P	0600	02	PT CLOY	64	7429	3707	1	1110	66
MCLEAN203	016	01-19-75	1600	30-26 N	080	083.0	20.3	03	10	02		125P	0600	02	PT CLOY	69	6171	3517	0	0	23
MCLEAN203	017	01-19-75	2000	30-26 N	080	082.7	20.2	02	05	02		125P	0600	02	PT CLOY	70	7164	2714	0	0	-35
MCLEAN203	017	01-19-75	2000	30-26 N	080	082.7	20.2	02	05	02		125P	0600	02	PT CLOY	66	8193	3854	0	0	-155
MCLEAN203	017	01-19-75	2000	30-26 N	080	082.7	20.2	02	05	02		125P	0600	02	PT CLOY	60	7430	3449	0	0	-153
MCLEAN203	017	01-19-75	2000	30-26 N	080	082.7	20.2	02	05	02		125P	0600	02	PT CLOY	62	6605	3582	0	0	-96
MCLEAN203	016	01-19-75	2400	30-26 N	080	083.3	20.4	03	10	02		125P	0600	03	PT CLOY	60	7517	4192	1	876	-170
MCLEAN203	016	01-19-75	2400	30-26 N	080	083.3	20.4	03	10	02		125P	0600	03	PT CLOY	59	7532	3729	0	0	-206

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ANALOG TAPE NUMBER	LCGRUOK INDEX	DATE	TIME GMT	LATITUDE	SHIPS COURSE	SHIPS SPEED KTS	REL WAVE DIR	REL WAVE STATE	REL WAVE HT FT	REL WAVE SECS	SEA STATE	SHIPS SPEED KTS	REL WAVE DIR	REL WAVE STATE	REL WAVE HT FT	REL WAVE SECS	SWELL HT FEET	SWELL LENGTH FEET	SEA TEMP	AIR TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS
MCLEAN203	016	01-19-75	38-26 N	041-33 W	080	083.3	057P	037P	02	03	10	02	02	02	125P	0600	57	055	055	125P	65	7215	3743	0	-184	
59E	11	2400																								
MCLEAN203	018	01-19-75	38-26 N	041-33 W	060	083.3	057P	057P	02	03	10	02	02	02	125P	0600	57	055	055	125P	67	7392	3354	0	-155	
59E	12	2400																								
MCLEAN203	019	01-20-75	38-26 N	041-33 W	060	083.3	035P	035P	01	02	05	01	01	01	125P	0600	59	PT CLOUDY	055	125P	62	8627	3935	0	-214	
59E	13	0400																								
MCLEAN203	019	01-20-75	38-26 N	041-33 W	060	083.3	035P	035P	01	02	05	01	01	01	125P	0600	59	PT CLOUDY	055	125P	65	8340	3537	1	669	-206
59E	14	0400																								
MCLEAN203	019	01-20-75	38-26 N	041-33 W	080	083.3	035P	035P	01	02	05	01	01	01	125P	0600	59	PT CLOUDY	055	125P	60	8501	3758	0	-170	
59E	15	0400																								
MCLEAN203	020	01-20-75	38-26 N	041-33 W	078	084.3	033P	033P	01	04	15	01	01	01	123P	0600	60	PT CLOUDY	055	123P	63	6823	3523	0	-103	
59E	17	0800																								
MCLEAN203	020	01-20-75	38-26 N	041-33 W	078	084.3	033P	033P	01	04	15	01	01	01	123P	0600	60	PT CLOUDY	055	123P	61	4984	2978	0	-74	
59E	18	0800																								
MCLEAN203	020	01-20-75	38-26 N	041-33 W	070	084.3	033P	033P	01	04	15	01	01	01	123P	0600	60	PT CLOUDY	055	123P	70	5943	2787	0	-103	
59E	19	0300																								
MCLEAN203	020	01-20-75	38-26 N	041-33 W	078	084.3	033P	033P	01	04	15	01	01	01	123P	0600	60	PT CLOUDY	055	123P	66	6185	2780	0	-23	
59E	20	0300																								
MCLEAN203	021	01-20-75	38-26 N	041-26 W	072	070.4	018S	018S	01	03	10	01	01	01	117P	0600	59	PT CLOUDY	055	117P	74	5810	3148	0	-1273	
59E	21	1200																								
MCLEAN203	021	01-20-75	38-26 N	041-26 W	072	070.4	018S	018S	01	03	10	01	01	01	117P	0600	59	PT CLOUDY	055	117P	62	5905	2706	0	-1251	
59E	22	1200																								
MCLEAN203	021	01-20-75	38-26 N	041-26 W	072	070.4	018S	018S	01	03	10	01	01	01	117P	0600	59	PT CLOUDY	055	117P	80	6260	2302	0	-1133	
59E	23	1200																								
MCLEAN203	021	01-20-75	38-26 N	041-26 W	072	070.4	018S	018S	01	03	10	01	01	01	117P	0600	59	PT CLOUDY	055	117P	73	5582	3074	0	-593	
59E	24	1200																								
MCLEAN203	022	01-20-75	38-26 N	041-26 W	072	070.6	018S	018S	01	03	10	01	01	01	117P	0600	57	057	057	117P	74	5790	2902	0	-729	ROLLING IN 6 IN SEAS
59E	25	1630																								
MCLEAN203	022	01-20-75	38-26 N	041-26 W	072	070.6	018S	018S	01	03	10	01	01	01	117P	0600	57	057	057	117P	70	5494	2478	0	-677	ROLLING IN 6 IN SEAS
59E	26	1630																								

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ANALOG TAPE NUMBER	LOGBOOK INDEX	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIP'S COURSE	PROG RPM	REL WAVE DIR	REL WAVE PO	REL WAVE SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS	
TRIP INTERVAL NUM																				
		TIME GMT		LONGITUDE		SHIP'S COURSE		REL WAVE DIR		REL WAVE PO		REL WAVE SECS		SWELL DIR		SWELL LENGTH FEET		SEA TEMP		
		SPEED KTS		STATE		HT LENG		FEET FT		BAROM		INCH		TEMP		PSI		PSI		
		KNOTS																		
---WAVE IND--- 1ST MODE																				
MCLEAN203	022	01-20-75	1600	39-50 N	031-26 W	072	070.6	0185	0185	01	02	01	117P	0600	57	CLEAR	4597	2574	0	ROLLING IN 6 IN BEA
59E	27												006	10423	057		75		0	-743
MCLEAN203	022	01-20-75	1600	39-50 N	031-26 W	072	070.6	0185	0185	01	02	01	117P	0600	57	CLEAR	5729	3045	0	ROLLING IN 6 IN BEA
59E	28												006	10423	057		82		0	-546
MCLEAN203	023	01-20-75	2000	39-50 N	031-26 W	072	070.7	0185	0185	01	02	01	117P	0600	58	CLEAR	6185	2882	0	-1207
59E	29												006	10449	054		69		0	-1207
MCLEAN203	023	01-20-75	2000	39-50 N	031-26 W	072	070.7	0185	0185	01	02	01	117P	0600	58	CLEAR	5413	2404	0	-1222
59E	30												006	10449	054		90		0	-1222
MCLEAN203	023	01-20-75	2000	39-50 N	031-26 W	072	070.7	0185	0185	01	02	01	117P	0600	58	CLEAR	5090	2721	0	-1222
59E	31												006	10449	054		76		0	-1222
MCLEAN203	023	01-20-75	2000	39-50 N	031-26 W	072	070.7	0185	0185	01	02	01	117P	0600	58	CLEAR	5200	2618	0	-1200
59E	32												006	10449	054		80		0	-1200
MCLEAN203	024	01-20-75	2400	39-50 N	031-26 W	072	070.2	0185	0185	01	02	01	117P	0600	56	CLEAR	4503	2500	0	-1273
59E	33												006	10451	053		82		0	-1273
MCLEAN203	024	01-20-75	2400	39-50 N	031-26 W	072	070.2	0185	0185	01	02	01	117P	0600	56	CLEAR	4005	2228	0	-1295
59E	34												006	10451	053		80		0	-1295
MCLEAN203	024	01-20-75	2400	39-50 N	031-26 W	072	070.2	0185	0185	01	02	01	117P	0600	56	CLEAR	6619	2647	0	-1324
59E	35												006	10451	053		75		0	-1324
MCLEAN203	024	01-20-75	2400	39-50 N	031-26 W	072	070.2	0185	0185	01	02	01	117P	0600	56	CLEAR	5641	3039	0	-1295
59E	36												006	10451	053		69		0	-1295
MCLEAN203	025	01-21-75	0400	39-50 N	031-26 W	072	070.4	0185	0185	01	02	01	117P	0600	57	PT CLOUD	5632	2228	0	-1324
59E	37												006	10444	054		80		0	-1324
MCLEAN203	025	01-21-75	0400	39-50 N	031-26 W	072	070.4	0185	0185	01	02	01	117P	0600	57	PT CLOUD	6039	2728	0	-1295
59E	38												006	10444	054		79		0	-1295
MCLEAN203	025	01-21-75	0400	39-50 N	031-26 W	072	070.4	0185	0185	01	02	01	117P	0600	57	PT CLOUD	5625	2513	0	-1295
59E	39												006	10444	054		81		0	-1295
MCLEAN203	025	01-21-75	0400	39-50 N	031-26 W	072	070.4	0185	0185	01	02	01	117P	0600	57	PT CLOUD	6032	2684	0	-1273
59E	40												006	10444	054		82		0	-1273
MCLEAN203	026	01-21-75	0800	39-50 N	031-26 W	072	071.2	162P	162P	01	02	01	117P	0600	57	PT CLOUD	4104	2334	0	-1324
59E	41												006	10445	054		82		0	-1324
MCLEAN203	026	01-21-75	0800	39-50 N	031-26 W	072	071.2	162P	162P	01	02	01	117P	0600	57	PT CLOUD	5049	2686	0	-1288
59E	42												006	10443	054		88		0	-1288

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MCLEAN203	030	01-21-75	2400	42-00 N	072	065.9	1755	02		117P	0600	54	OCAST	90	6965	2677	0	-2376
MCLEAN205	031	01-22-75	0400	42-00 N	072	064.7	162P	02		162P	0600	56	OCAST	86	7143	3093	0	0
MCLEAN205	031	01-22-75	0400	42-00 N	072	064.7	162P	02		162P	0600	56	OCAST	87	6800	2750	0	131
MCLEAN205	031	01-22-75	0400	42-00 N	072	064.7	162P	02		162P	0600	56	OCAST	83	7034	3166	0	211
MCLEAN205	031	01-22-75	0400	42-00 N	072	064.7	162P	02		162P	0600	56	OCAST	82	5852	2836	0	226
MCLEAN205	032	01-22-75	0600	42-00 N	072	064.7	162P	02		162P	0600	54	OCAST	83	6092	3174	0	175
MCLEAN205	032	01-22-75	0600	42-00 N	072	064.7	162P	02		162P	0600	54	OCAST	73	7581	2933	0	175
MCLEAN205	032	01-22-75	0600	42-00 N	072	064.7	162P	02		162P	0600	54	OCAST	76	6129	3312	0	138
MCLEAN205	032	01-22-75	0600	42-00 N	072	064.7	162P	02		162P	0600	54	OCAST	75	7633	3911	0	160
MCLEAN205	033	01-22-75	1200	43-55 N	072	064.7	173P	04		162P	0600	55	OCAST	76	3690	3772	0	853
MCLEAN205	033	01-22-75	1200	43-55 N	072	064.7	173P	04		162P	0600	55	OCAST	76	8215	3422	0	877
MCLEAN205	033	01-22-75	1200	43-55 N	072	064.7	173P	04		162P	0600	55	OCAST	73	8748	3808	0	839
MCLEAN205	033	01-22-75	1200	43-55 N	072	064.7	173P	04		162P	0600	55	OCAST	73	7274	3502	0	375
MCLEAN205	034	01-22-75	1600	43-55 N	054	064.2	133P	05		144P	0600	54	OCAST	67	7202	3309	0	817
MCLEAN205	034	01-22-75	1600	43-55 N	054	064.2	133P	05		144P	0600	54	OCAST	42	9023	2911	0	861
MCLEAN205	034	01-22-75	1600	43-55 N	054	064.2	133P	05		144P	0600	54	OCAST	60	5844	3093	0	861

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ANALOG TAPE NUMBER	LCG000K INDEX	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROP RPM	SEA STATE	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	REL SHELL DIR	SHELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	P-T-O-T CF	NUMBER OF BUSSIS	COMMENTS
---WAVE IND--- 1ST MODE																					
MCLEAN205	039	01-23-75	47-20 N	007-37 W	049	064.9	150P	150P	03	006	0800	52	JCAST	85	7778	3137	0	0	758		
59E	33	1200																			
MCLEAN205	039	01-23-75	47-20 N	007-37 W	049	064.9	150P	150P	03	006	0800	52	JCAST	81	5917	3093	0	0	760		
59E	34	1200																			
MCLEAN205	039	01-23-75	47-20 N	007-37 W	049	064.9	150P	150P	03	006	0800	52	JCAST	78	6266	3006	0	0	795		
59E	35	1200																			
MCLEAN205	039	01-23-75	47-20 N	007-37 W	049	064.9	150P	150P	03	006	0800	52	JCAST	80	5771	2867	0	0	751		
59E	36	1200																			
MCLEAN205	040	01-23-75	47-20 N	007-37 W	049	064.3	161P	161P	02	006	0800	51	PT CLDY	79	6705	2736	0	0	715		
59E	37	1600																			
MCLEAN205	040	01-23-75	47-20 N	007-37 W	049	064.3	161P	161P	02	006	0800	51	PT CLDY	80	5428	2904	0	0	736		
59E	38	1600																			
MCLEAN205	040	01-23-75	47-20 N	007-37 W	049	064.3	161P	161P	02	006	0800	51	PT CLDY	63	6076	2597	0	0	758		
59E	39	1600																			
MCLEAN205	040	01-23-75	47-20 N	007-37 W	049	064.3	161P	161P	02	006	0800	51	PT CLDY	79	6143	3130	0	0	839		
59E	40	1600																			
MCLEAN205	041	01-23-75	47-20 N	007-37 W	056	066.6	156P	156P	02	006	0800	50	PT CLDY	70	6807	3546	0	0	671		
59E	41	2000																			
MCLEAN205	041	01-23-75	47-20 N	007-37 W	066	066.6	156P	156P	02	006	0800	50	PT CLDY	72	8646	3590	20	1714	715		
59E	42	2000																			
MCLEAN207	004	01-28-75	1323		110.0																
59W	04																				
MCLEAN207	005	01-28-75	2000		260	110.0	035P	035P	01	006	0800	41	RAIN	186	1138	547	13	837	133		
59W	05																				
MCLEAN207	005	01-28-75	2000		260	110.0	035P	035P	01	006	0800	41	RAIN	168	1131	561	7	791	14		
59W	06																				
MCLEAN207	005	01-28-75	2000		260	110.0	035P	035P	01	006	0800	41	RAIN	153	1123	606	0	0	-392		
59W	07																				
MCLEAN207	005	01-28-75	2000		260	110.0	035P	035P	01	006	0800	41	RAIN	182	1427	626	0	0	-503		
59W	08																				
MCLEAN207	006	01-28-75	2400		216	119.0	0525	0525	01	006	0800	43	JCAST	187	1885	903	41	1345	-555		
59W	09																				

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ANALOG TAPE NUMBER	LC800K INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	SEA SPEED KTS	REL WIND DIR	REL WAVE DIR	REL WAVE PD SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

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ANALOG LOGBOOK TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE DIR	REL WAVE PO	REL WAVE SECS	SEA STATE	SHIPS SPEED KTS	SEA WIND SPEED	REL WAVE HT	REL WAVE LENG	SWELL HT	SWELL LENG	SEA TEMP	AIR TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS
MCLEAN207 015	59W 47	01-30-75	1200	41-46 N	016-25 W	229	116.2	026P	026P	03							0185	0600	56	057	56	6337	2920	3349	53	-289
MCLEAN207 015	59W 48	01-30-75	1200	41-46 N	016-25 W	229	116.2	026P	026P	03							006	0600	56	057	56	8289	3366	2595	50	-257
MCLEAN207 016	59W 49	01-30-75	1600	41-46 N	016-25 W	229	120.9	041S	041S	02							0185	0600	56	THIN	055	7357	3105	2706	59	-999
MCLEAN207 016	59W 50	01-30-75	1600	41-46 N	016-25 W	229	120.9	041S	041S	02							0185	0600	56	THIN	055	9790	3334	5420	51	-343
MCLEAN207 016	59W 51	01-30-75	1600	41-46 N	016-25 W	229	120.9	041S	041S	02							0185	0600	56	THIN	055	11358	4091	3763	65	-725
MCLEAN207 016	59W 52	01-30-75	1600	41-46 N	016-25 W	229	120.9	041S	041S	02							0185	0600	56	THIN	055	9006	3578	2950	52	-703
MCLEAN207 017	59W 53	01-30-75	2000	41-46 N	016-25 W	249	131.5	021S	021S	02							0105	0600	57	PT	056	9194	3142	3039	62	-573
MCLEAN207 017	59W 54	01-30-75	2000	41-46 N	016-25 W	249	131.5	021S	021S	02							0105	0600	57	PT	056	8962	3342	3268	65	-629
MCLEAN207 017	59W 55	01-30-75	2000	41-46 N	016-25 W	249	131.5	021S	021S	02							0105	0600	57	PT	056	6709	3164	2528	60	-630
MCLEAN207 017	59W 56	01-30-75	2000	41-46 N	016-25 W	249	131.5	021S	021S	02							0105	0600	57	PT	056	7100	3135	2950	53	-636
MCLEAN207 018	59W 57	01-30-75	2400	41-46 N	016-25 W	249	132.2	032S	032S	02							0105	0600	58	PT	056	9280	4074	3453	64	-659
MCLEAN207 018	59W 58	01-30-75	2400	41-46 N	016-25 W	249	132.2	032S	032S	02							0105	0600	58	PT	056	9205	4140	3046	63	-673
MCLEAN207 018	59W 59	01-30-75	2400	41-46 N	016-25 W	249	132.2	032S	032S	02							0105	0600	58	PT	056	7350	3327	2292	55	-725
MCLEAN207 018	59W 60	01-30-75	2400	41-46 N	016-25 W	249	132.2	032S	032S	02							0105	0600	58	PT	056	8566	3423	4074	39	-592
MCLEAN207 019	59W 01	01-31-75	0400	41-46 N	016-25 W	249	129.2	024P	024P	02							0105	0600	58	PT	056	11819	4543	4083	39	0
MCLEAN207 019	59W 02	01-31-75	0400	41-46 N	016-25 W	249	129.2	024P	024P	02							0105	0600	58	PT	056	10079	3753	2008	34	178

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ANALOGG	LCBBOOK	DATE	TIME	LATITUDE	LONGITUDE	SHIPS	PROP	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL</
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ANALOG TAPE NUMBER	INDEX NUM	DATE	TIME GMT	LATITUDE	SHIP'S COURSE	PROP KPM	REL WIND DIR	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	REL SWELL DIR	REL SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS
TRIP INTERVAL NUM					LONGITUDE	SPEED KTS	STATE	WIND SPEED KNOTS	WAVE HT FEET	WAVE LENG FT	SWELL HT FEET	BAROM INCH HG	AIR TEMP						
MCLEAN209	027	02-01-75	32-35	N	044-25	249	117.0	002P	002P	04	0435	0800	65	PT CLOUDY	143	4296	2869	2527	
59M	35	1200																	
MCLEAN209	027	02-01-75	32-35	N	044-25	249	117.0	002P	002P	04	0435	0800	65	PT CLOUDY	164	3501	3077	2601	
59M	36	1200																	
MCLEAN209	028	02-01-75	32-35	N	044-25	270	113.7	011S	011S	03	0225	0300	66	PT CLOUDY	12740	4601	5448	2415	
59M	37	1600																	
MCLEAN209	028	02-01-75	32-35	N	044-25	270	113.7	011S	011S	03	0225	0800	66	PT CLOUDY	173	4356	3382	2527	
59M	38	1600																	
MCLEAN209	028	02-01-75	32-35	N	044-25	270	113.7	011S	011S	03	0225	0300	66	PT CLOUDY	170	3724	3315	2594	
59M	39	1600																	
MCLEAN209	028	02-01-75	32-35	N	044-25	270	113.7	011S	011S	03	0225	0800	66	PT CLOUDY	170	4275	4068	2653	
59M	40	1600																	
MCLEAN209	029	02-01-75	32-35	N	044-25	270	121.0	022S	022S	03	0455	0600	64	PT CLOUDY	162	4014	2661	2311	
59M	41	2000																	
MCLEAN209	029	02-01-75	32-35	N	044-25	270	121.0	022S	022S	03	0455	0800	64	PT CLOUDY	172	3716	3746	2371	
59M	42	2000																	
MCLEAN209	029	02-01-75	32-35	N	044-25	270	121.0	022S	022S	03	0455	0300	64	PT CLOUDY	171	3753	2475	2371	
59M	43	2000																	
MCLEAN209	029	02-01-75	32-35	N	044-25	270	121.0	022S	022S	03	0455	0300	64	PT CLOUDY	169	3775	3136	2363	
59M	44	2000																	
MCLEAN209	030	02-01-75	32-35	N	044-25	290	127.5	002S	002S	02	0255	0400	66	PT CLOUDY	161	3523	3307	2014	
59M	45	2400																	
MCLEAN209	030	02-01-75	32-35	N	044-25	290	127.5	002S	002S	02	0255	0300	66	PT CLOUDY	167	3233	1903	2021	
59M	46	2400																	
MCLEAN209	030	02-01-75	32-35	N	044-25	290	127.5	002S	002S	02	0255	0300	66	PT CLOUDY	190	3241	3315	2230	
59M	47	2400																	
MCLEAN209	030	02-01-75	32-35	N	044-25	290	127.5	002S	002S	02	0255	0300	66	PT CLOUDY	191	3150	2436	2066	
59M	48	2400																	
MCLEAN209	031	02-02-75	32-35	N	044-25	290	132.4	002S	002S	02	0255	0300	66	PT CLOUDY	192	2099	1917	2066	
59M	49	0400																	
MCLEAN209	031	02-02-75	32-35	N	044-25	290	132.4	002S	002S	02	0255	0600	66	PT CLOUDY	193	2809	2594	1994	
59M	50	0400																	

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ANALOG TAPE NUMBER	LC800K INDEX NUMBER	DATE	TIME GMT	LATITUDE	SHIPS COURSE	PROP RPM	SEA STATE	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	SWELL HT FEET	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS
---WAVE INFO--- 1ST MODE																			
MCLEAN209	031	02-02-75	32-35 N	044-25 W	290	132.4	0025	0025		02	0255	0600	66	PT CLDY	184	5255	2527	39	1969 2014
59W	51		0400								004	10161	064						
MCLEAN209	031	02-02-75	32-35 N	044-25 W	290	132.4	0025	0025		02	0255	0600	66	PT CLDY	190	5790	2512	36	1984
59W	52		0400								004	10161	064						
MCLEAN209	032	02-02-75	32-35 N	044-25 W	290	132.0	0025	0025		01	0255	0600	65	CCAST	152	4794	1955	27	2035
59W	53		0800								003	10152	061						
MCLEAN209	032	02-02-75	32-35 N	044-25 W	290	132.0	0025	0025		01	0255	0600	65	CCAST	190	4742	1903	26	2051
59W	54		0800								003	10152	061						
MCLEAN209	032	02-02-75	32-35 N	044-25 W	290	132.0	0025	0025		01	0255	0600	65	CCAST	195	3924	1917	36	2007
59W	55		0800								003	10152	061						
MCLEAN209	032	02-02-75	32-35 N	044-25 W	290	132.0	0025	0025		01	0255	0600	65	CCAST	178	3629	1895	30	1999
59W	56		0800								003	10152	061						
MCLEAN209	033	02-02-75	32-35 N	044-25 W	290	132.5	0255	0255		01	0255	0600	65	CCAST	179	2683	1390	41	1940
59W	57		1200								003	10184	058						
MCLEAN209	033	02-02-75	32-35 N	044-25 W	290	132.5	0255	0255		01	0255	0600	65	CCAST	162	3860	1501	23	1910
59W	58		1200								003	10184	058						
MCLEAN209	033	02-02-75	32-35 N	044-25 W	290	132.5	0255	0255		01	0255	0600	65	CCAST	145	3278	1620	15	1925
59W	59		1200								003	10184	058						
MCLEAN209	033	02-02-75	32-35 N	044-25 W	290	132.5	0255	0255		01	0255	0600	65	CCAST	138	4118	1613	19	1954
59W	60		1200								003	10184	058						
MCLEAN209	034	02-02-75	32-35 N	044-25 W	290	132.5	0255	0255		01	0255	0600	59	CCAST	157	2560	1338	10	2059
59W	61		1600								003	10160	056						
MCLEAN209	034	02-02-75	32-35 N	044-25 W	290	132.5	0255	0255		01	0255	0600	59	CCAST	152	4244	1687	18	2183
59W	62		1600								003	10169	056						
MCLEAN209	034	02-02-75	32-35 N	044-25 W	290	132.5	0255	0255		01	0255	0600	58	CCAST	163	3620	1685	17	2244
59W	63		1600								003	10160	056						
MCLEAN209	034	02-02-75	32-35 N	044-25 W	290	132.5	0255	0255		01	0255	0600	59	CCAST	146	3820	1836	12	2319
59W	64		1600								003	10188	056						
MCLEAN211	003	02-07-75	1200		090	087.2	090P	090P		02	157P	0500	43	CCAST	149	521	255	0	DEPART PORTSMOUTH
50E	05										006	10112	041						
MCLEAN211	003	02-07-75	1200		090	087.2	090P	090P		02	157P	0500	43	CCAST	165	456	361	0	DEPART PORTSMOUTH
50E	10										006	10112	041						

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ANALOG LOGBOOK TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE DIR	REL WAVE PU SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS
---WAVE IND--- 1ST MODE																			
MCLEAN211 003 60E 11	02-07-75	1200	090	087.2	090P	090P	21.2	03	10	02	157P	0500	43	OCAST	170	1122	457	2	DEPART PORTSMOUTH, VA -2924
MCLEAN211 003 60E 12	02-07-75	1200	090	087.2	090P	090P	21.2	03	10	02	157P	0500	43	OCAST	192	1410	558	2	DEPART PORTSMOUTH, VA -1514
MCLEAN211 004 60E 13	02-07-75	1600	094	094.3	139P	139P	23.0	05	20	03	161P	0500	45	OCAST	148	2052	1018	1	634 2192
MCLEAN211 004 60E 14	02-07-75	1600	094	094.3	139P	139P	23.0	05	20	03	161P	0500	45	OCAST	152	2230	1004	1	767 2120
MCLEAN211 004 60E 15	02-07-75	1600	094	094.3	139P	139P	23.0	05	20	03	161P	0500	45	OCAST	143	2414	974	0	2133
MCLEAN211 004 60E 16	02-07-75	1600	094	094.3	139P	139P	23.0	05	20	03	161P	0500	45	OCAST	138	1950	1011	0	2008
MCLEAN211 005 60E 17	02-07-75	2000	094	092.8	139P	139P	22.6	06	25	03	161P	0500	71	OCAST	121	3073	1328	0	1337
MCLEAN211 005 60E 18	02-07-75	2000	094	092.8	139P	139P	22.6	06	25	03	161P	0500	71	OCAST	120	2392	1262	0	1454
MCLEAN211 005 60E 19	02-07-75	2000	094	092.8	139P	139P	22.6	06	25	03	161P	0500	71	OCAST	103	2679	1587	1	769 1291
MCLEAN211 005 60E 20	02-07-75	2000	094	092.8	139P	139P	22.6	06	25	03	161P	0500	71	OCAST	104	2312	1490	0	1156
MCLEAN211 006 60E 21	02-07-75	2400	094	118.7	139P	139P	28.9	06	25	03	161P	0500	69	OCAST	101	2709	1380	0	1144
MCLEAN211 006 60E 22	02-07-75	2400	094	118.7	139P	139P	28.9	06	25	03	161P	0500	69	OCAST	99	3051	1543	0	1259
MCLEAN211 006 60E 23	02-07-75	2400	094	118.7	139P	139P	28.9	06	25	03	161P	0500	69	OCAST	98	3220	1400	0	1281
MCLEAN211 006 60E 24	02-07-75	2400	094	118.7	139P	139P	28.9	06	25	03	161P	0500	69	OCAST	95	3942	1623	0	1513
MCLEAN211 007 60E 25	02-08-75	0400	094	120.7	161P	161P	29.5	06	25	03	139P	0600	66	OCAST	77	4007	2111	0	1321
MCLEAN211 007 60E 26	02-08-75	0400	094	120.7	161P	161P	29.5	06	25	03	139P	0600	66	OCAST	65	5455	2408	0	1225

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ANALOG TAPE NUMBER	LOGBOOK INDEX	DATE	TIME GMT	LATITUDE	SHIP COURSE	SHIP LONGITUDE	SHIP SPEED KTS	SHIP STATE	SEA DIR	REL WIND DIR	REL WAVE DIR	REL WAVE PERIOD	REL WAVE SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS
MCLEAN211	007	02-08-75	36-46 N	073-44 W	094	120.7	161P	161P	03	139P	0600	66	0CAST	4901	2510	0	1594					
60E	27	0400	073-44 N	29.5	06	25	03															
MCLEAN211	007	02-08-75	36-46 N	073-44 W	094	120.7	161P	161P	03	139P	0600	66	0CAST	5780	2554	0	1166					
60E	28	0400	073-44 N	29.5	06	25	03															
MCLEAN211	008	02-08-75	36-46 N	073-44 W	094	120.5	139P	139P	03	139P	0600	70	0CAST	5684	2746	0	1380					
60E	29	0800	073-44 N	29.4	07	30	03															
MCLEAN211	008	02-08-75	36-46 N	073-44 W	094	120.5	139P	139P	03	139P	0600	70	0CAST	8017	2940	0	1493					
60E	30	0800	073-44 N	29.4	07	30	03															
MCLEAN211	008	02-08-75	36-46 N	073-44 W	094	120.5	139P	139P	03	139P	0600	70	0CAST	6445	2731	0	1483					
60E	31	0800	073-44 N	29.4	07	30	03															
MCLEAN211	009	02-08-75	36-46 N	073-44 W	094	120.7	139P	139P	03	139P	0600	64	0CAST	5721	2347	0	1469					
60E	32	0800	073-44 N	29.4	07	30	03															
MCLEAN211	009	02-08-75	36-46 N	073-44 W	094	120.7	139P	139P	03	139P	0600	64	0CAST	5035	2259	0	1742					
60E	33	1200	073-44 N	29.5	06	25	03															
MCLEAN211	009	02-08-75	36-46 N	073-44 W	094	120.7	139P	139P	03	139P	0600	64	0CAST	3765	2087	1	612	1609				
60E	34	1200	073-44 N	29.5	06	25	03															
MCLEAN211	009	02-08-75	36-46 N	073-44 W	094	120.7	139P	139P	03	139P	0600	64	0CAST	5101	2313	0	1011					
60E	35	1200	073-44 N	29.5	06	25	03															
MCLEAN211	010	02-08-75	36-46 N	073-44 W	094	121.0	161P	161P	03	161P	0600	63	0CAST	5027	2118	0	1806					
60E	36	1600	060-14 N	29.5	07	30	03															
MCLEAN211	010	02-08-75	36-46 N	073-44 W	094	121.0	161P	161P	03	161P	0600	63	0CAST	4239	2059	0	1920					
60E	37	1600	060-14 N	29.5	07	30	03															
MCLEAN211	010	02-08-75	36-46 N	073-44 W	094	121.0	161P	161P	03	161P	0600	63	0CAST	5027	2000	0	2052					
60E	38	1600	060-14 N	29.5	07	30	03															
MCLEAN211	010	02-08-75	36-46 N	073-44 W	094	121.0	161P	161P	03	161P	0600	63	0CAST	5374	2185	0	2177					
60E	39	2000	060-14 N	29.6	00	25	03															
MCLEAN211	011	02-08-75	36-46 N	073-44 W	094	121.1	161P	161P	03	161P	0600	65	PT CLDY	5751	2761	1	701	1461				
60E	40	2000	060-14 N	29.6	00	25	03															
MCLEAN211	011	02-08-75	36-46 N	073-44 W	094	121.1	161P	161P	03	161P	0600	65	PT CLDY	4516	2576	0	1101					
60E	41	2000	060-14 N	29.6	00	25	03															
MCLEAN211	011	02-08-75	36-46 N	073-44 W	094	121.1	161P	161P	03	161P	0600	65	PT CLDY									
60E	42	2000	060-14 N	29.6	00	25	03															

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ANALOG TAPE NUMBER	LC6600K INDEX NUMBER	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE PD	REL WAVE DIR	REL WAVE SECS	SWELL HT FEET	SWELL LENGTH FEET	SEA INCH HT	AIR TEMP HG	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS		
---WAVE INQ--- 1ST MODE																							
MCLEAN211	011	02-03-75	2000	36-02 N	060-14 W	094	121.1	161P	161P	03	03	161P	0600	010	10159	072	65 PT CLDY	75	5359	2362	0	1358	
60E	43							06	25	03													
MCLEAN211	011	02-08-75	2000	36-02 N	060-14 W	094	121.1	161P	161P	03	03	161P	0600	010	10159	072	65 PT CLDY	57	4651	2746	0	1255	
60E	44							06	25	03													
MCLEAN211	012	02-08-75	2400	36-02 N	060-14 W	094	121.0	161P	161P	03	03	161P	0600	010	10179	065	64 CCST	66	6806	2170	0	753	
60E	45							06	25	03													
MCLEAN211	012	02-08-75	2400	36-02 N	060-14 W	094	121.0	161P	161P	03	03	161P	0600	010	10179	065	64 CCST	58	4414	2362	0	1040	
60E	46							06	25	03													
MCLEAN211	012	02-08-75	2400	36-02 N	060-14 W	094	121.0	161P	161P	03	03	161P	0600	010	10179	065	64 CCST	58	5574	2318	0	959	
60E	47							06	25	03													
MCLEAN211	012	02-08-75	2400	36-02 N	060-14 W	094	121.0	161P	161P	03	03	161P	0600	010	10179	065	64 CCST	75	4134	1993	0	1092	
60E	48							06	25	03													
MCLEAN211	013	02-09-75	0400	36-02 N	060-14 W	094	121.1	161P	161P	03	03	161P	0600	008	10191	063	62 PT CLDY	59	5352	2443	0	834	
60E	49							06	25	03													
MCLEAN211	013	02-09-75	0400	36-02 N	060-14 W	094	121.1	161P	161P	03	03	161P	0600	008	10191	063	62 PT CLDY	61	5443	2332	0	952	
60E	50							06	25	03													
MCLEAN211	013	02-09-75	0400	36-02 N	060-14 W	094	121.1	161P	161P	03	03	161P	0600	008	10191	063	62 PT CLDY	57	5640	2296	0	967	
60E	51							06	25	03													
MCLEAN211	013	02-09-75	0400	36-02 N	060-14 W	094	121.1	161P	161P	03	03	161P	0600	008	10191	063	62 PT CLDY	63	6245	2214	1	2975	864
60E	52							06	25	03													
MCLEAN211	014	02-09-75	0800	36-02 N	060-14 W	094	120.7	161P	161P	03	03	161P	0600	008	10193	072	64 PT CLDY	60	5751	2268	0	1011	
60E	53							04	15	03													
MCLEAN211	014	02-09-75	0800	36-02 N	060-14 W	094	120.7	161P	161P	03	03	161P	0600	008	10193	072	64 PT CLDY	66	4422	2104	0	922	
60E	54							04	15	03													
MCLEAN211	014	02-09-75	0800	36-02 N	060-14 W	094	120.7	161P	161P	03	03	161P	0600	008	10193	072	64 PT CLDY	60	4651	2392	0	989	
60E	55							04	15	03													
MCLEAN211	014	02-09-75	0800	36-02 N	060-14 W	094	120.7	161P	161P	03	03	161P	0600	008	10193	072	64 PT CLDY	56	4675	2236	0	1284	
60E	56							04	15	03													
MCLEAN211	015	02-09-75	1200	36-12 N	046-42 W	090	085.1	157P	157P	03	03	157P	0600	008	10223	068	61 PT CLDY	51	4392	2534	0	1033	
60E	57							05	20	03													
MCLEAN211	015	02-09-75	1200	36-12 N	046-42 W	090	085.1	157P	157P	03	03	157P	0600	008	10228	068	61 PT CLDY	82	4516	2347	0	2074	
60E	58							05	20	03													

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ANALOG TAPE NUMBER		DATE	TIME GMT	LATITUDE	SHIPS COURSE	SHIPS PROP RPM	SEA STATE	REL WIND DIR	REL WAVE DIR	REL SWELL DIR	SWELL LENGTH FT	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS
TRIP INTERVAL																		
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ANALOG LOGBOOK TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE DIR	REL WAVE SECS	SEA STATE	WIND SPEED KTS	WAVE HT FEET	WAVE LENG FT	SWELL HT FEET	SWELL LENG FEET	SEA TEMP	AIR TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER CP BURSTS	MEAN STRESS PSI	COMMENTS
MCLEAN213 019	15	02-10-75	0400	35-12 N	072	080.9	117P	02	05	03					139P	0800	61	PT CLOUDY		83	2842	0	0	-326	
60E					046-42 W	19.7									012	10240	59								
MCLEAN213 019	16	02-10-75	0400	35-12 N	072	080.9	117P	02	05	03					139P	0800	61	PT CLOUDY		79	2901	0	0	-37	
60E					046-42 W	19.7									012	10240	59								
MCLEAN213 020	17	02-10-75	0800	35-12 N	072	080.6	117P	04	15	03					139P	0800	61	PT CLOUDY		76	3086	0	0	-452	
60E					046-42 W	19.6									012	10242	59								
MCLEAN213 020	18	02-10-75	0800	35-12 N	072	080.6	117P	04	15	03					139P	0800	61	PT CLOUDY		81	2946	0	0	-459	
60E					046-42 W	19.6									012	10242	59								
MCLEAN213 020	19	02-10-75	0800	35-12 N	072	080.6	117P	04	15	03					139P	0800	61	PT CLOUDY		73	3516	2	977	-467	
60E					046-42 W	19.6									012	10242	59								
MCLEAN213 020	20	02-10-75	0800	35-12 N	072	080.6	117P	04	15	03					139P	0800	61	PT CLOUDY		76	3368	1	681	-467	
60E					046-42 W	19.6									012	10242	59								
MCLEAN213 021	21	02-10-75	1200	37-20 N	073	081.3	118P	04	15	03					140P	0800	60	PT CLOUDY		77	3175	0	0	-304	
60E					037-40 W	19.8									016	10246	60								
MCLEAN213 021	22	02-10-75	1200	37-20 N	073	081.3	118P	04	15	03					140P	0800	60	PT CLOUDY		69	2672	0	0	-393	
60E					037-40 W	19.8									016	10246	60								
MCLEAN213 021	23	02-10-75	1200	37-20 N	073	081.3	118P	04	15	03					140P	0800	60	PT CLOUDY		83	2947	0	0	-156	
60E					037-40 W	19.8									016	10246	60								
MCLEAN213 021	24	02-10-75	1200	37-20 N	073	081.3	118P	04	15	03					140P	0800	60	PT CLOUDY		69	3423	0	0	0	
60E					037-40 W	19.8									016	10246	60								
MCLEAN213 022	25	02-10-75	1600	37-20 N	073	084.9	163P	02	05	02					140P	0800	59	PT CLOUDY		69	3627	0	0	0	
60E					037-40 W	20.7									016	10240	59								
MCLEAN213 022	26	02-10-75	1600	37-20 N	073	084.9	163P	02	05	02					140P	0800	59	PT CLOUDY		66	3553	0	0	51	
60E					037-40 W	20.7									016	10230	59								
MCLEAN213 022	27	02-10-75	1600	37-20 N	073	084.9	163P	02	05	02					140P	0800	59	PT CLOUDY		69	3516	0	0	-20	
60E					037-40 W	20.7									016	10230	59								
MCLEAN213 022	28	02-10-75	1600	37-20 N	073	084.9	163P	02	05	02					140P	0800	59	PT CLOUDY		74	3360	0	0	-149	
60E					037-40 W	20.7									016	10230	59								
MCLEAN213 023	29	02-10-75	2000	37-20 N	073	084.8	163P	03	10	03					140P	0800	54	PT CLOUDY		65	4271	0	0	-607	
60E					037-40 W	20.7									016	10229	55								
MCLEAN213 023	30	02-10-75	2000	37-20 N	073	084.8	163P	03	10	03					140P	0800	54	PT CLOUDY		67	3294	0	0	-535	
60E					037-40 W	20.7									016	10229	55								

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ANALG NUMBER	LC800K TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GAT	LATITUDE	LONGITUDE	SHIPS COURSE	PROF RPM	SEA STATE	REL WIND DIR	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS
---WAVE IND--- 1ST MODE																						
MCLEAN213	027	60E	02-11-75	1200	39-40 N	027-50 W	073	085.3	1745	06	25	04		118P	0600	56	PT CLDY	64	6332	3567	0	222
MCLEAN213	027	60E	02-11-75	1210	39-40 N	027-50 W	073	085.3	1745	06	25	04		118P	0600	56	PT CLDY	65	6787	3442	0	162
MCLEAN213	028	60E	02-11-75	1600	39-40 N	027-50 W	073	085.8	1525	05	20	04		118P	0700	57	PT CLDY	67	5736	3212	0	-23
MCLEAN213	028	60E	02-11-75	1600	39-40 N	027-50 W	073	085.8	1525	05	20	04		118P	0700	57	PT CLDY	65	5995	2953	0	-149
MCLEAN213	028	60E	02-11-75	1600	39-40 N	027-50 W	073	085.8	1525	05	20	04		118P	0700	57	PT CLDY	65	6173	3693	0	-326
MCLEAN213	028	60E	02-11-75	1600	39-40 N	027-50 W	073	085.8	1525	05	20	04		118P	0700	57	PT CLDY	67	7594	3419	0	-260
MCLEAN213	029	50E	02-11-75	2000	39-40 N	027-50 W	072	086.5	1535	06	25	04		117P	0700	53	PT CLDY	63	8631	3945	0	-430
MCLEAN213	029	60E	02-11-75	2030	39-40 N	027-50 W	072	086.5	1535	06	25	04		117P	0700	58	PT CLDY	63	5995	2857	0	-334
MCLEAN213	029	60E	02-11-75	2000	39-40 N	027-50 W	072	086.5	1535	06	25	04		117P	0700	53	PT CLDY	61	7742	3479	0	-163
MCLEAN213	030	60E	02-11-75	2400	39-40 N	027-50 W	072	086.8	1645	06	25	04		117P	0700	54	PT CLDY	61	5322	3101	0	-236
MCLEAN213	030	60E	02-11-75	2400	39-40 N	027-50 W	072	086.8	1645	06	25	04		117P	0700	54	PT CLDY	61	6377	3242	0	-245
MCLEAN213	030	60E	02-11-75	2400	39-40 N	027-50 W	072	086.8	1645	06	25	04		117P	0700	54	PT CLDY	62	3433	4063	0	-245
MCLEAN213	031	60E	02-12-75	0400	39-40 N	027-50 W	072	086.7	1755	05	20	04		117P	0700	56	BCAST	63	5076	3220	0	-186
MCLEAN213	031	60E	02-12-75	0400	39-40 N	027-50 W	072	086.7	1755	05	20	04		117P	0700	56	BCAST	64	8471	3360	0	0
MCLEAN213	031	60E	02-12-75	0400	39-40 N	027-50 W	072	086.7	1755	05	20	04		117P	0700	56	BCAST	62	6232	3306	0	59

ANALOG TAPE NUMBER	LOGBOOK INDEX NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROP RPM	SEA STATE	REL WIND DIR	REL WAVE PD	REL WAVE DIR	REL WAVE SECS	SWELL HT FEET	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	COMMENTS
MCLEAN215	031	02-12-75	0400	39-40 N	072	086.7	1755	20	04	117P	0700	56	OCAS	60	3402	0	44			
MCLEAN215	032	02-12-75	0400	39-40 N	072	086.7	1755	20	04	117P	0700	56	OCAS	63	2966	0	81			
MCLEAN215	033	02-12-75	0800	39-40 N	072	086.7	139P	139P	04	139P	0800	57	OCAS	60	3781	0	81			
MCLEAN215	034	02-12-75	0800	39-40 N	072	086.7	139P	139P	04	139P	0800	57	OCAS	64	3202	0	81			
MCLEAN215	035	02-12-75	0800	39-40 N	072	086.7	139P	139P	04	139P	0800	57	OCAS	64	3217	0	44			
MCLEAN215	036	02-12-75	0800	39-40 N	072	086.7	139P	139P	04	139P	0800	57	OCAS	72	3105	0	148			
MCLEAN215	037	02-12-75	1200	42-12 N	052	082.2	119P	119P	04	097P	0700	56	OCAS	65	3699	0	557			
MCLEAN215	038	02-12-75	1200	42-12 N	052	082.2	119P	119P	04	097P	0700	56	OCAS	61	2600	0	400			
MCLEAN215	039	02-12-75	1200	42-12 N	052	082.2	119P	119P	04	097P	0700	56	OCAS	76	3165	0	401			
MCLEAN215	040	02-12-75	1600	42-12 N	052	076.5	097P	097P	04	097P	0700	56	OCAS	60	2565	0	297			
MCLEAN215	041	02-12-75	1600	42-12 N	052	076.5	097P	097P	04	097P	0700	56	OCAS	79	2756	0	148			
MCLEAN215	042	02-12-75	1600	42-12 N	052	076.5	097P	097P	04	097P	0700	56	OCAS	73	2429	0	252			
MCLEAN215	043	02-12-75	1600	42-12 N	052	076.5	097P	097P	04	097P	0700	56	OCAS	72	2377	0	141			
MCLEAN215	044	02-12-75	1600	42-12 N	052	076.5	097P	097P	04	097P	0700	56	OCAS	74	2585	1	176			
MCLEAN215	045	02-12-75	2000	42-12 N	052	082.0	097P	097P	04	097P	0700	55	OCAS	73	2062	0	208			
MCLEAN215	046	02-12-75	2000	42-12 N	052	082.0	097P	097P	04	097P	0700	55	OCAS	79	4517	0	304			

STILL ROLLING 20 DEC

STILL ROLLING 20 DEC

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ANALOG TAPE NUMBER	LC6600K INDEX	TRIP INTERVAL	DATE	TIME GMT	LATITUDE	SHIPS COURSE	SHIPS SPEED KTS	SEA STATE	REL WIND DIR	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	SWELL DIR	SWELL HT FEET	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	P-T-T NUMBER OF BURSTS	MEAN STRESS PSI	COMMENTS	
MCLEAN215	035	02-12-75		42-12 N	017-18 W	052	20.0	05	097P	097P	04	04	097P	0700	010	10159	053	UCAST	70	5624	2763	0	0	STILL ROLLING 20 DEC
MCLEAN215	036	02-12-75		42-12 N	017-18 W	052	20.0	05	097P	097P	04	04	097P	0700	010	10160	054	UCAST	73	5312	2438	0	0	243
MCLEAN215	036	02-12-75		42-12 N	017-18 W	052	20.0	05	097P	097P	04	04	097P	0700	010	10160	054	UCAST	73	5900	2607	0	0	257
MCLEAN215	036	02-12-75		42-12 N	017-18 W	052	20.0	05	097P	097P	04	04	097P	0700	010	10160	054	UCAST	78	3547	2362	0	0	403
MCLEAN215	036	02-12-75		42-12 N	017-18 W	052	20.0	05	097P	097P	04	04	097P	0700	010	10160	054	UCAST	73	5391	2682	0	0	371
MCLEAN215	037	02-13-75		42-12 N	017-18 W	052	19.7	04	15	04	15	04	097P	0600	080	10146	052	UCAST	76	5400	2741	0	0	274
MCLEAN215	037	02-13-75		42-12 N	017-18 W	052	19.7	04	15	04	15	04	097P	0600	080	10146	052	UCAST	76	5503	2674	0	0	267
MCLEAN215	037	02-13-75		42-12 N	017-18 W	052	19.7	04	15	04	15	04	097P	0600	080	10146	052	UCAST	31	6263	2332	0	0	245
MCLEAN215	037	02-13-75		42-12 N	017-18 W	052	19.7	04	15	04	15	04	097P	0600	080	10146	052	UCAST	76	6441	2793	0	0	267
MCLEAN215	038	02-13-75		42-12 N	017-18 W	052	19.3	05	20	04	20	04	097P	0600	080	10143	050	PT CLOUDY	76	5802	2483	0	0	222
MCLEAN215	038	02-13-75		42-12 N	017-18 W	052	19.3	05	20	04	20	04	097P	0600	080	10143	050	PT CLOUDY	76	5327	2800	0	0	312
MCLEAN215	038	02-13-75		42-12 N	017-18 W	052	19.3	05	20	04	20	04	097P	0600	080	10143	050	PT CLOUDY	75	5133	2653	0	0	512
MCLEAN215	039	02-13-75		40-42 N	008-54 W	052	19.4	05	20	04	20	04	097P	0600	006	10149	046	PT CLOUDY	73	5504	2875	0	0	572
MCLEAN215	039	02-13-75		40-42 N	008-54 W	052	19.4	05	20	04	20	04	097P	0600	006	10149	046	PT CLOUDY	71	5119	2315	0	0	594
MCLEAN215	040	02-13-75		40-42 N	008-54 W	052	19.2	05	20	03	20	03	097P	0600	006	10112	055	PT CLOUDY	77	5135	2600	0	0	267
MCLEAN215	040	02-13-75		40-42 N	008-54 W	052	19.3	05	20	03	20	03	097P	0600	006	10112	055	PT CLOUDY	82	6508	2697	0	0	289

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ANALOG TAPE NUMBER	LCGBOOK INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	RPM	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	SEA STATE	REL WIND DIR	REL WIND SPEED KTS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	BURSTS OF	P-T-O-T NUMBER	COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

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ANALOG TAPE NUMBER	LCSBOOK INDEX NUM	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	SHIPS COURSE	PRGP RPM	SEA STATE	REL WIND DIR	REL WAVE DIR	REL WAVE PU SECS	SWELL LENGTH FEET	REL DIR	SWELL HT FEET	BAROM INCH HG	AIR TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS
MCLEAN215	044	02-14-75	46-42 N	0800	008-54	056	063.1	1695	05	01	146P	0400	003	10045	046	50	2200	1121	0	0	445	
MCLEAN215	044	02-14-75	46-42 N	0800	008-54	056	063.1	1695	05	01	146P	0400	003	10045	046	50	2200	1121	0	0	445	
MCLEAN217	001	02-18-75	1600	295	113.6	070P	070P	070P	070P	070P	070P	0300	004	10213	053	172	6543	2620	4	975	0	
MCLEAN217	001	02-18-75	1600	295	113.6	070P	070P	070P	070P	070P	070P	0300	004	10213	053	173	5233	2300	0	0	327	
MCLEAN217	001	02-18-75	1600	295	113.6	070P	070P	070P	070P	070P	070P	0300	004	10213	053	173	6451	2559	0	0	220	
MCLEAN217	001	02-18-75	1600	295	113.6	070P	070P	070P	070P	070P	070P	0300	004	10213	053	175	6162	2627	7	751	327	
MCLEAN217	002	02-18-75	2000	236	132.7	013P	013P	013P	013P	013P	013P	0300	004	10196	053	165	5202	2399	15	1069	510	
MCLEAN217	002	02-18-75	2000	236	132.7	013P	013P	013P	013P	013P	013P	0300	004	10196	053	171	5583	2109	5	891	502	
MCLEAN217	002	02-18-75	2000	236	132.7	013P	013P	013P	013P	013P	013P	0300	004	10196	053	164	5365	2262	5	1035	548	
MCLEAN217	002	02-18-75	2000	236	132.7	013P	013P	013P	013P	013P	013P	0300	004	10196	053	165	5842	2201	18	1509	445	
MCLEAN217	003	02-18-75	2400	229	132.5	004P	004P	004P	004P	004P	004P	0400	004	10202	054	169	5537	2445	16	1317	415	
MCLEAN217	003	02-18-75	2400	229	132.5	004P	004P	004P	004P	004P	004P	0400	004	10202	054	166	5271	2155	5	1074	464	
MCLEAN217	003	02-18-75	2400	229	132.5	004P	004P	004P	004P	004P	004P	0400	004	10202	054	157	5615	2231	23	1523	510	
MCLEAN217	003	02-18-75	2400	229	132.5	004P	004P	004P	004P	004P	004P	0400	004	10202	054	149	5720	2269	11	1272	510	
MCLEAN217	004	02-19-75	0400	229	133.0	004P	004P	004P	004P	004P	004P	0300	003	10200	054	153	4044	1972	0	0	403	
MCLEAN217	004	02-19-75	0400	229	133.0	004P	004P	004P	004P	004P	004P	0300	003	10200	054	161	5507	2125	2	1462	441	

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THIRD SEASON RESULTS FROM SHIP RESPONSE INSTRUMENTATION ABOARD --ETC(U)

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ANALOG LOGBOOK TAPE INGR NUMBER	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE DIR	REL WAVE SEGS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS
MCLEAN217 004	02-19-75	0400			229	133.0	004P	004P	02	004P	0300	52	OCAS T MAIN	151	5080	1894	2	736 418
60W 15					32.5	02	05	02										
MCLEAN217 004	02-19-75	0400			229	133.0	004P	004P	02	004P	0300	52	OCAS T MAIN	151	4242	1896	1	708 457
60W 16					32.5	02	05	02										
MCLEAN217 005	02-19-75	0800			229	133.8	004P	004P	02	004P	0300	53	OCAS T	157	4197	1683	0	373
60W 17					32.6	02	05	02										
MCLEAN217 005	02-19-75	0800			229	133.8	004P	004P	02	004P	0300	53	OCAS T	154	3663	1607	0	815
60W 18					32.6	02	05	02										
MCLEAN217 005	02-19-75	0800			229	133.8	004P	004P	02	004P	0300	53	OCAS T	146	3275	1545	0	616
60W 19					32.6	02	05	02										
MCLEAN217 005	02-19-75	0800			229	133.8	004P	004P	02	004P	0300	53	OCAS T	160	3225	1614	0	647
60W 20					32.6	02	05	02										
MCLEAN217 006	02-19-75	1200			229	130.4	049P	049P	04	004P	0400	54	OCAS T	109	3031	1385	4	868 815
60W 21					31.8	05	20	04										
MCLEAN217 006	02-19-75	1200			229	130.4	049P	049P	04	004P	0400	54	OCAS T	103	3735	1531	2	868 751
60W 22					31.8	05	20	04										
MCLEAN217 006	02-19-75	1200			229	130.4	049P	049P	04	004P	0400	54	OCAS T	102	3034	1515	3	746 738
60W 23					31.8	05	20	04										
MCLEAN217 006	02-19-75	1200			229	130.4	049P	049P	04	004P	0400	54	OCAS T	177	4187	1591	2	799 789
60W 24					31.8	05	20	04										
MCLEAN217 007	02-19-75	1600			239	129.6	053S	053S	04	014P	0400	54	PT CLOUD	107	4494	1157	0	677
60W 25					31.8	02	05	04										
MCLEAN217 007	02-19-75	1600			239	129.6	053S	053S	04	014P	0400	54	PT CLOUD	174	3149	1500	0	799
60W 26					31.8	02	05	04										
MCLEAN217 007	02-19-75	1600			239	129.6	053S	053S	04	014P	0400	54	PT CLOUD	162	4379	1721	1	647 959
60W 27					31.8	02	05	04										
MCLEAN217 007	02-19-75	1600			239	129.6	053S	053S	04	014P	0400	54	PT CLOUD	103	5034	1511	1	639 1013
60W 28					31.8	02	05	04										
MCLEAN217 008	02-19-75	2000			255	129.6	060S	060S	05	030P	0400	56	PT CLOUD	177	8401	3166	25	SEAS OFF STANDARD 8
60W 29					31.8	06	25	05										
MCLEAN217 008	02-19-75	2000			255	129.6	060S	060S	05	030P	0400	56	PT CLOUD	173	7751	3753	53	SEAS OFF STANDARD 8
60W 30					31.8	06	25	05										

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ANALOG LOGBOOK		TRIP INTERVAL		DATE	TIME	LATITUDE	SHIPS COURSE	PROF RPM	SEA STATE	REL WIND DIR	REL WAVE DIR	REL WAVE SECS	SWELL LENGTH	REL SWELL DIR	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	NUMBER OF BURSTS	COMMENTS
---WAVE IND--- 1ST MODE																						
MCLEAN217 008	60W 31	02-19-75	43-08 N	255	129.6	0605	0605	05	05	030P	0400	56	PT CLOUDY	171	6386	2985	1835	982	SEAS OFF STARBOARD E			
MCLEAN217 008	60W 32	02-19-75	43-08 N	255	129.6	0605	0605	05	05	030P	0400	56	PT CLOUDY	174	8700	3615	5650	875	SEAS OFF STARBOARD E			
MCLEAN217 009	60W 33	02-19-75	43-08 N	255	129.0	0715	0715	06	06	0605	0600	57	PT CLOUDY	179	7990	3385	2239	853				
MCLEAN217 009	60W 34	02-19-75	43-08 N	255	129.0	0715	0715	06	06	0605	0600	57	PT CLOUDY	176	7731	3564	2947	863				
MCLEAN217 009	60W 35	02-19-75	43-08 N	255	129.0	0715	0715	06	06	0605	0600	57	PT CLOUDY	175	9285	3359	3709	845				
MCLEAN217 009	60W 36	02-19-75	43-08 N	255	129.0	0715	0715	06	06	0605	0600	57	PT CLOUDY	174	7259	2902	2760	807				
MCLEAN217 010	60W 37	02-20-75	43-08 N	255	128.9	0375	0375	05	04	0605	0600	56	PT CLOUDY	171	7557	2854	2475	776				
MCLEAN217 010	60W 38	02-20-75	43-08 N	255	128.9	0375	0375	05	04	0605	0600	56	PT CLOUDY	173	8153	2688	2003	784				
MCLEAN217 010	60W 39	02-20-75	43-08 N	255	128.9	0375	0375	05	04	0605	0600	56	PT CLOUDY	176	8934	3001	2452	792				
MCLEAN217 010	60W 40	02-20-75	43-08 N	255	128.9	0375	0375	05	04	0605	0600	56	PT CLOUDY	173	7425	2543	1051	769				
MCLEAN217 011	60W 41	02-20-75	43-08 N	270	129.3	0225	0225	01	01	0225	0600	57	PT CLOUDY	180	1225	3183	2242	700				
MCLEAN217 011	60W 42	02-20-75	43-08 N	270	129.3	0225	0225	01	01	0225	0600	57	PT CLOUDY	182	8275	2785	2209	658				
MCLEAN217 011	60W 43	02-20-75	43-08 N	270	129.3	0225	0225	01	01	0225	0600	57	PT CLOUDY	180	5720	2457	1595	675				
MCLEAN217 011	60W 44	02-20-75	43-08 N	270	129.3	0225	0225	01	01	0225	0600	57	PT CLOUDY	183	5503	2520	1302	830				
MCLEAN217 012	60W 45	02-20-75	43-08 N	260	129.5	033P	033P	04	03	0045	0600	55	PT CLOUDY	187	6249	2437	1427	921				
MCLEAN217 012	60W 46	02-20-75	43-08 N	260	129.5	033P	033P	04	03	0045	0600	55	PT CLOUDY	182	4693	2155	868	1088				

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ANALOG TAPE NUMBER	LOGBOOK INDEX	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	SHIPS SPEED KTS	REL WIND DIR	REL WIND STATE	REL WAVE DIR	REL WAVE PERIOD SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS
MCLEAN217	012	02-20-75	39-52 N	1230	031-00 W	238	129.5	063P	063P	03	03	0045	0600	55	PT CLOUDY	100	4509	1007	8	567 1089
MCLEAN217	012	02-20-75	39-52 N	1200	031-00 W	288	129.5	063P	063P	03	03	0045	0600	55	PT CLOUDY	199	3907	1607	15	914 567
MCLEAN217	013	02-20-75	39-52 N	1600	031-00 W	270	128.5	063P	068P	03	03	0225	0500	57	PT CLOUDY	174	2437	1112	19	1154 799
MCLEAN217	013	02-20-75	39-52 N	1600	031-00 W	270	128.5	068P	068P	03	03	0225	0500	57	PT CLOUDY	170	2585	1119	7	808 1160
MCLEAN217	013	02-20-75	39-52 N	1800	031-00 W	270	123.5	068P	068P	03	03	0225	0500	57	PT CLOUDY	175	2400	997	2	769 1645
MCLEAN217	013	02-20-75	39-52 N	1600	031-00 W	270	128.5	068P	068P	03	03	0225	0500	57	PT CLOUDY	170	2201	907	1	670 1305
MCLEAN217	014	02-20-75	39-52 N	2000	031-00 W	230	114.0	068P	068P	03	03	0225	0500	57	BCAST	172	2105	391	10	1104 1713
MCLEAN217	014	02-20-75	39-52 N	2000	031-00 W	270	114.0	068P	068P	03	03	0225	0500	57	BCAST	159	1752	921	14	1112 1305
MCLEAN217	014	02-20-75	39-52 N	2000	031-00 W	270	114.0	068P	068P	03	03	0225	0500	57	BCAST	163	2075	982	13	1053 1729
MCLEAN217	014	02-20-75	39-52 N	2000	031-00 W	270	114.0	068P	068P	03	03	0225	0500	57	BCAST	169	2010	944	15	952 1591
MCLEAN217	015	02-20-75	39-52 N	2400	031-00 W	270	114.5	068P	068P	03	03	0225	0500	56	BCAST	167	2374	1188	10	853 1828
MCLEAN217	015	02-20-75	39-52 N	2400	031-00 W	270	114.5	068P	068P	03	03	0225	0500	56	BCAST	200	2690	1294	29	1407 1350
MCLEAN217	015	02-20-75	39-52 N	2400	031-00 W	270	114.5	068P	068P	03	03	0225	0500	56	BCAST	203	2810	1447	21	1085 1650
MCLEAN217	015	02-20-75	39-52 N	2400	031-00 W	270	114.5	068P	068P	03	03	0225	0500	56	BCAST	196	3793	1063	23	1081 1843
MCLEAN219	016	02-21-75	39-52 N	0600	031-00 W	270	113.4	063P	063P	03	03	0225	0600	56	BCAST	199	4289	1731	44	1060 0
MCLEAN219	016	02-21-75	39-52 N	0400	031-00 W	270	113.4	063P	068P	03	03	0225	0600	56	BCAST	197	3563	2041	22	1165 03

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ANALOG NUMBER	LC8800K INDEX	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE PD	REL WAVE DIR	REL WAVE SECS	REL WAVE HT	REL WAVE FT	REL WAVE DIR	SWELL LENGTH FEET	SEA TEMP	AIR TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER BURSTS	COMMENTS
MCLEAN219	010	02-21-75	0400	39-52 N	270	113.4	068P	068P	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	03																						
MCLEAN219	016	02-21-75	0400	39-52 N	270	113.4	068P	068P	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	04																						
MCLEAN219	017	02-21-75	0800	39-52 N	270	111.9	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	05																						
MCLEAN219	017	02-21-75	0800	39-52 N	270	111.9	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	06																						
MCLEAN219	017	02-21-75	0800	39-52 N	270	111.9	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	07																						
MCLEAN219	018	02-21-75	1200	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	08																						
MCLEAN219	018	02-21-75	1200	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	09																						
MCLEAN219	019	02-21-75	1600	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	10																						
MCLEAN219	019	02-21-75	1600	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	11																						
MCLEAN219	019	02-21-75	1600	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	12																						
MCLEAN219	019	02-21-75	1600	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	13																						
MCLEAN219	019	02-21-75	1600	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	14																						
MCLEAN219	019	02-21-75	1600	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	15																						
MCLEAN219	019	02-21-75	1600	39-53 N	270	087.4	022S	022S	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
60W	16																						
MCLEAN219	020	02-21-75	2000	39-53 N	270	092.8	090P	090P	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
60W	17																						
MCLEAN219	020	02-21-75	2000	39-53 N	270	092.8	090P	090P	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
60W	18																						

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ANALOG LOGBOOK TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	SHIPS SPEED KTS	SEA STATE	REL WIND DIR	REL WAVE DIR	REL WAVE PU	REL WAVE SECS	SWELL DIA	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS
MCLEAN219	020	02-21-75	2000	39-53 N	045-20 W	270	22.6	01	02	01			0225	0800	66	CCAST	185	2704	1060	7	479
60W	19																				
MCLEAN219	020	02-21-75	2000	39-53 N	045-20 W	270	22.6	01	02	01			0225	0800	66	CCAST	186	2483	1127	3	464
60W	20																				
MCLEAN219	021	02-21-75	2400	39-53 N	045-20 W	270	21.8	03	10	02			0675	0500	67	CCAST	192	2056	853	1	-762
60W	21																				
MCLEAN219	021	02-21-75	2400	39-53 N	045-20 W	270	21.8	03	10	02			0675	0500	67	CCAST	193	1853	655	1	-533
60W	22																				
MCLEAN219	021	02-21-75	2400	39-53 N	045-20 W	270	21.6	03	10	02			0675	0500	67	CCAST	190	1828	1089	6	-549
60W	23																				
MCLEAN219	021	02-21-75	2400	39-53 N	045-20 W	270	21.8	03	10	02			0675	0500	67	CCAST	194	1593	822	2	-541
60W	24																				
MCLEAN219	022	02-22-75	0400	39-53 N	045-20 W	270	22.3	02	05	02			0455	0600	66	CCAST	183	1165	0	0	-724
60W	25																				
MCLEAN219	022	02-22-75	0400	39-53 N	045-20 W	270	22.3	02	05	02			0455	0600	66	CCAST	182	1317	0	0	-732
60W	26																				
MCLEAN219	022	02-22-75	0400	39-53 N	045-20 W	270	22.3	02	05	02			0455	0600	66	CCAST	185	1249	0	0	-732
60W	27																				
MCLEAN219	022	02-22-75	0400	39-53 N	045-20 W	270	22.3	02	05	02			0455	0600	66	CCAST	175	1249	700	2	-709
60W	28																				
MCLEAN219	023	02-22-75	0800	39-53 N	045-20 W	270	22.3	02	05	02			0455	0600	66	CCAST	192	1035	723	6	-648
60W	29																				
MCLEAN219	023	02-22-75	0800	39-53 N	045-20 W	270	22.3	02	05	02			0455	0600	66	CCAST	185	975	906	7	-534
60W	30																				
MCLEAN219	023	02-22-75	0800	39-53 N	045-20 W	270	22.3	02	05	02			0455	0600	66	CCAST	176	1112	929	3	-503
60W	31																				
MCLEAN219	023	02-22-75	0800	39-53 N	045-20 W	270	22.3	02	05	02			0455	0600	66	CCAST	184	1157	914	4	-518
60W	32																				
MCLEAN219	024	02-22-75	1200	39-53 N	045-20 W	270	22.4	07	30	05			0455	0500	60	CCAST	185	1241	929	6	-564
60W	33																				
MCLEAN219	024	02-22-75	1200	39-53 N	045-20 W	270	22.4	07	30	05			0455	0500	60	CCAST	185	1254	1536	18	-602
60W	34																				

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ANALOG LOGBOOK TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	SHIPS SPEED KTS	PROP RPM	SEA STATE	REL WIND DIR	REL WAVE DIR	REL WAVE SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	MAX P-T-T STRESS PSI	NUMBER OF BURSTS	COMMENTS		
MCLEAN219 024 60m 35	02-22-75	39-53 N	1200	045-20 W	270	091.7	22.4	07	0455	0455	0455	05	0455	0600	60	CCAST	4334	1873	16	967	-557
MCLEAN219 024 60m 36	02-22-75	39-53 N	1200	045-20 W	270	091.7	22.4	07	0455	0455	0455	05	0455	0500	60	CCAST	5309	2125	15	1492	-541
MCLEAN219 025 60m 37	02-22-75	39-44 N	1600	057-05 W	270	089.6	21.8	08	0455	0675	0675	07	0455	0500	59	CCAST	7502	3366	50	2940	-572
MCLEAN219 025 60m 38	02-22-75	39-44 N	1600	057-05 W	270	089.6	21.8	08	0455	0675	0675	07	0455	0600	59	CCAST	8279	3298	32	3054	-572
MCLEAN219 025 60m 39	02-22-75	39-44 N	1600	057-05 W	270	089.6	21.8	08	0455	0675	0675	07	0455	0600	59	CCAST	8416	3618	35	2033	-732
MCLEAN219 025 60m 40	02-22-75	39-44 N	1600	057-05 W	270	089.6	21.8	08	0455	0675	0675	07	0455	0600	59	CCAST	8218	3785	37	2336	-634
MCLEAN219 026 60m 41	02-22-75	39-44 N	2000	057-05 W	272	088.6	21.6	06	0435	0435	0435	07	0435	0600	70	CCAST	4242	1965	13	929	-602
MCLEAN219 026 60m 42	02-22-75	39-44 N	2000	057-05 W	272	088.6	21.6	08	0435	0435	0435	07	0435	0600	70	CCAST	3717	1637	8	975	-476
MCLEAN219 026 60m 43	02-22-75	39-44 N	2000	057-05 W	272	088.6	21.6	08	0435	0435	0435	07	0435	0600	70	CCAST	4101	1904	5	807	-549
MCLEAN219 026 60m 44	02-22-75	39-44 N	2000	057-05 W	272	088.6	21.6	06	0435	0435	0435	07	0435	0600	70	CCAST	3500	1896	6	875	-595
MCLEAN219 027 60m 45	02-22-75	39-44 N	2400	057-05 W	272	090.9	22.2	04	0435	0435	0435	04	0435	0600	60	CCAST	1957	792	0	0	-823
MCLEAN219 027 60m 46	02-22-75	39-44 N	2400	057-05 W	272	090.9	22.2	04	0435	0435	0435	04	0435	0600	60	CCAST	1591	716	4	708	-300
MCLEAN219 027 60m 47	02-22-75	39-44 N	2400	057-05 W	272	090.9	22.2	04	0435	0435	0435	04	0435	0600	60	CCAST	1424	731	0	0	-803
MCLEAN219 027 60m 48	02-22-75	39-44 N	2400	057-05 W	274	090.9	22.2	04	0435	0435	0435	04	0435	0600	60	CCAST	1249	609	0	0	-310
MCLEAN219 028 60m 49	02-23-75	39-44 N	0400	057-05 W	272	091.9	22.4	06	0429	0029	0029	05	0435	0600	43	PT CLOUD	865	335	0	0	-755
MCLEAN219 028 60m 50	02-23-75	39-44 N	0400	057-05 W	272	091.9	22.4	06	0429	0029	0029	05	0435	0600	43	PT CLOUD	522	327	0	0	-625

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TRIP INTERVAL NUM																	
MCLEAN219 028 60W 51	02-23-75	0400	39-44 N	057-05 W	272	081.9	002P	002P	05	0435	0600	43	PT CLDY	179	602	300	0 -709
MCLEAN219 029 60W 52	02-23-75	0400	39-44 N	057-05 W	272	091.9	002P	002P	05	0435	0600	43	PT CLDY	184	769	358	0 -747
MCLEAN219 030 60W 53	02-23-75	0800	39-44 N	057-05 W	272	089.7	002P	002P	01	0435	0600	62	PT CLDY	146	525	256	0 -510
MCLEAN219 031 60W 54	02-23-75	0800	39-44 N	057-05 W	272	089.7	002P	002P	01	0435	0600	62	PT CLDY	136	601	261	0 -534
MCLEAN219 032 60W 55	02-23-75	0800	39-44 N	057-05 W	272	089.7	002P	002P	01	0435	0600	62	PT CLDY	131	464	243	0 -507
MCLEAN219 033 60W 56	02-23-75	0800	39-44 N	057-05 W	272	089.7	002P	002P	01	0435	0600	62	PT CLDY	115	441	236	0 -572
MCLEAN219 034 60W 57	02-23-75	1200	39-44 N	057-05 W	272	081.0	069P	069P	02	0435	0600	55	PT CLDY	129	449	198	0 -572
MCLEAN219 035 60W 58	02-23-75	1200	39-44 N	057-05 W	272	081.0	069P	069P	02	0435	0600	55	PT CLDY	86	472	243	0 -511
MCLEAN219 036 60W 59	02-23-75	1200	39-44 N	057-05 W	272	081.0	069P	069P	02	0435	0600	55	PT CLDY	97	594	220	0 -442
MCLEAN219 037 60W 60	02-23-75	1200	39-44 N	057-05 W	272	081.0	069P	069P	02	0435	0600	55	PT CLDY	100	420	205	0 -328
MCLEAN221 031 60W 01	02-23-75	1600	39-54 N	069-03 W	272	081.4	070P	070P	03	070P	0500	58	LCAST	102	433	235	0 0
MCLEAN221 032 60W 02	02-23-75	1600	39-54 N	069-03 W	272	081.4	070P	070P	03	070P	0500	58	LCAST	136	638	243	0 30
MCLEAN221 033 60W 03	02-23-75	2000	39-54 N	069-03 W	272	073.1	070P	070P	02	070P	0500	58	LCAST	133	634	272	0 243
MCLEAN221 034 60W 04	02-23-75	2000	39-54 N	069-03 W	272	073.1	070P	070P	02	070P	0500	58	LCAST	146	623	357	0 243
MCLEAN221 035 60W 05	02-23-75	2000	39-54 N	069-03 W	272	073.1	070P	070P	02	070P	0500	58	LCAST	149	732	319	0 226
MCLEAN221 036 60W 06	02-23-75	2000	39-54 N	069-03 W	272	073.1	070P	070P	02	070P	0500	58	LCAST	144	630	273	0 226

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ANALOG LOGBOOK TAPE INDEX NUMBER	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PRUP RPM	SEA STATE	REL WIND DIR	REL WAVE PD	REL WAVE DIR	REL WAVE SECS	SWELL HT FEET	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF SURSTS	COMMENTS
TRIP INTERVAL NUM																				
MCLEAN221 033	02-23-75	2400	39-54 N	069-03 W	273	066.3									43 DENSE FOG	151	897	441	0	235
60W 04						16.2						10120	050							
MCLEAN221 033	02-23-75	2400	39-54 N	069-03 W	273	066.3									43 DENSE FOG	141	935	486	0	242
60W 10						16.2						10120	050							
MCLEAN221 033	02-23-75	2400	39-54 N	069-03 W	273	066.3									43 DENSE FOG	130	951	372	0	220
60W 11						16.2						10120	050							
MCLEAN221 034	02-24-75	0400	39-54 N	069-03 W	280	055.9									43 DENSE FOG	135	722	410	0	228
60W 13						13.6						10111	051							
MCLEAN221 034	02-24-75	0400	39-54 N	069-03 W	280	055.9									43 DENSE FOG	119	503	296	0	235
60W 14						13.6						10111	051							
MCLEAN221 034	02-24-75	0400	39-54 N	069-03 W	280	055.9									43 DENSE FOG	129	714	304	0	311
60W 15						13.6						10111	051							
MCLEAN221 034	02-24-75	0400	39-54 N	069-03 W	280	055.9									43 DENSE FOG	121	603	296	0	327
60W 16						13.6						10111	051							
MCLEAN223 002	02-28-75	2400			081	110.2	0995	0995			01	1445	0800	44	CLEAR	163	815	363	0	0
61E 05						26.8	02	05	01			001	10090	051						
MCLEAN223 002	02-28-75	2400			081	110.2	0995	0995			01	1445	0800	44	CLEAR	167	903	370	1	1171
61E 06						26.8	02	05	01			001	10090	051						305
MCLEAN223 002	02-28-75	2400			081	110.2	0995	0995			01	1445	0800	44	CLEAR	170	908	340	0	342
61E 07						26.8	02	05	01			001	10090	051						
MCLEAN223 002	02-28-75	2400			081	110.2	0995	0995			01	1445	0800	44	CLEAR	165	933	400	0	303
61E 08						26.8	02	05	01			001	10090	051						
MCLEAN223 003	03-01-75	0400			081	122.3	0995	0995			02	1445	0800	70	PT CLOUDY	154	1435	632	0	74
61E 09						29.6	02	05	02			002	10063	050						
MCLEAN223 003	03-01-75	0400			081	122.3	0995	0995			02	1445	0800	70	PT CLOUDY	155	1402	720	0	96
61E 10						29.6	02	05	02			002	10063	050						
MCLEAN223 003	03-01-75	0400			081	122.3	0995	0995			02	1445	0800	70	PT CLOUDY	159	1523	634	0	215
61E 11						29.6	02	05	02			002	10063	050						
MCLEAN223 003	03-01-75	0400			081	122.3	0995	0995			02	1445	0800	70	PT CLOUDY	160	1552	674	0	237
61E 12						29.6	02	05	02			002	10063	050						
MCLEAN223 004	03-01-75	0500			081	121.4	1445	1445			03	1445	0900	75	OCFAST	152	1520	667	0	252
61E 13						29.5	02	05	03			003	10054	059						

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ANALOG LOGBOOK TAPE INDEX NUMBER	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE DIR	REL WAVE SECS	SEA STATE	SEA WIND DIR	SEA WIND KNOTS	SWELL HT FEET	SWELL PERIOD SECS	SWELL DIR	SWELL HT FEET	BAROM INCH HG	AIR TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS
MCLEAN223 004 61E 14	03-01-75	0800			031 29.5	121.4	144S	144S	03				144S 0600	13	003	10054	059		CAST	154	822	0	311	
MCLEAN223 004 61E 15	03-01-75	0800			081 29.5	121.4	144S	144S	03				144S 0300	73	003	10054	059		CAST	160	857	0	355	
MCLEAN223 004 61E 16	03-01-75	0800			081 29.5	121.4	144S	144S	03				144S 0600	73	003	10054	059		CAST	169	867	0	341	
MCLEAN223 005 61E 17	03-01-75	1200	38-26 N	064-10 W	031 29.5	121.0	144S	144S	03				144S 0600	73	003	10042	060		CAST	116	4722	2016	8	1008 467
MCLEAN223 005 61E 18	03-01-75	1200	38-26 N	064-10 W	081 29.5	121.0	144S	144S	03				144S 0600	73	003	10042	060		CAST	106	4819	1994	11	1297 -3055
MCLEAN223 005 61E 19	03-01-75	1200	38-26 N	064-10 W	081 29.5	121.0	144S	144S	03				144S 0600	73	003	10042	060		CAST	110	4656	2075	8	1119 -2961
MCLEAN223 005 61E 20	03-01-75	1200	38-26 N	064-10 W	081 29.5	121.0	144S	144S	03				144S 0600	73	003	10042	060		CAST	96	3647	1779	4	793 -3063
MCLEAN223 006 61E 21	03-01-75	1600	38-26 N	064-10 W	081 29.0	119.1	121S	121S	04				144S 0600	70	006	10022	061		RAIN FOG	99	6524	2535	23	ROLLING 10 DEG PORT -3129
MCLEAN223 006 61E 22	03-01-75	1600	38-26 N	064-10 W	081 29.0	119.1	121S	121S	04				144S 0600	70	006	10022	061		RAIN FOG	105	6637	2565	24	ROLLING 10 DEG PORT -3107
MCLEAN223 006 61E 23	03-01-75	1600	38-26 N	064-10 W	081 29.0	119.1	121S	121S	04				144S 0600	70	006	10022	061		RAIN FOG	99	6457	2654	21	ROLLING 10 DEG PORT -3077
MCLEAN223 006 61E 24	03-01-75	1600	38-26 N	064-10 W	081 29.0	119.1	121S	121S	04				144S 0600	70	006	10022	061		RAIN FOG	100	6672	3010	32	ROLLING 10 DEG PORT -2922
MCLEAN223 007 61E 25	03-01-75	2000	38-26 N	064-10 W	081 29.0	119.2	080S	033S	06				099S 0600	06	008	09997	060		RAIN	110	6516	3002	34	1801 -2714
MCLEAN223 007 61E 26	03-01-75	2000	38-26 N	064-10 W	081 29.0	119.2	080S	080S	06				099S 0600	06	008	09997	060		RAIN	107	6632	3403	34	1215 -2744
MCLEAN223 007 61E 27	03-01-75	2000	38-26 N	064-10 W	081 29.0	119.2	080S	080S	06				099S 0600	06	008	09997	060		RAIN	102	6457	3158	26	2755 -2751
MCLEAN223 007 61E 28	03-01-75	2000	38-26 N	064-10 W	081 29.0	119.2	080S	080S	06				099S 0600	06	008	09997	060		RAIN	92	6637	3573	35	1545 -2736
MCLEAN223 008 61E 29	03-01-75	2400	38-26 N	064-10 W	081 29.0	119.4	080S	080S	06				099S 0600	05	008	09990	065		RAIN LIGHTNING	98	8368	2928	32	1809 -2656

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MCLEAN223	009	03-01-75	2400	38-26 N	081	118.4	0885	0885	06	0995	0600	65	RAIN LIGHTNING	91	5745	2809	34	1275	-2929
61E	30				084-10 W	28.8	08	40	06	008	05990	065							
MCLEAN223	006	03-01-75	2400	38-26 N	081	118.4	0885	0885	06	0995	0600	65	RAIN LIGHTNING	111	6075	2765	29	1416	-2865
61E	31				084-10 W	28.8	08	40	06	008	09990	065							
MCLEAN223	006	03-01-75	2400	38-26 N	081	118.4	0885	0885	06	0995	0600	65	RAIN LIGHTNING	119	6294	2617	39	2780	-3100
61E	32				084-10 W	28.8	08	40	06	008	09990	065							
MCLEAN223	009	03-02-75	0400	38-26 N	081	119.0	0995	0995	06	0995	0600	66	RAIN LIGHTNING	106	5871	2839	37	1462	HEAVY ROLL
61E	33				084-10 W	29.0	08	40	06	008	09992	065							-3160
MCLEAN223	009	03-02-75	0400	38-26 N	081	119.0	0995	0995	06	0995	0600	66	RAIN LIGHTNING	127	6309	3010	50	1890	HEAVY ROLL
61E	34				084-10 W	29.0	08	40	06	008	09992	065							-3226
MCLEAN223	009	03-02-75	0400	38-26 N	081	119.0	0995	0995	06	0995	0600	66	RAIN LIGHTNING	125	5212	2276	31	1349	HEAVY ROLL
61E	35				084-10 W	29.0	08	40	06	008	09992	065							-3137
MCLEAN223	009	03-02-75	0400	38-26 N	081	119.0	0995	0995	06	0995	0600	66	RAIN LIGHTNING	165	4233	2113	41	1705	HEAVY ROLL
61E	36				084-10 W	29.0	08	40	06	008	09992	065							-3063
MCLEAN223	010	03-02-75	0800	38-26 N	081	119.0	0545	0545	04	0995	0600	57	CCAST	137	7273	3492	39	3180	-3033
61E	37				084-10 W	29.0	06	25	04	006	10000	054							
MCLEAN223	010	03-02-75	0800	38-26 N	081	119.0	0545	0545	04	0995	0600	57	CCAST	122	7035	2676	29	1201	-2944
61E	38				084-10 W	29.0	06	25	04	006	10000	054							
MCLEAN223	010	03-02-75	0800	38-26 N	081	119.0	0545	0545	04	0995	0600	57	CCAST	122	5620	2772	29	1267	-3055
61E	39				084-10 W	29.0	06	25	04	006	10000	054							
MCLEAN223	010	03-02-75	0800	38-26 N	081	119.0	0545	0545	04	0995	0600	57	CCAST	115	4819	2505	22	1312	-2929
61E	40				084-10 W	29.0	06	25	04	006	10000	054							
MCLEAN223	011	03-02-75	1200	40-26 N	081	119.0	0995	0995	04	0995	0600	59	CCAST	112	5493	2631	17	1371	SLOW HEAVY ROLL
61E	41				084-10 W	29.0	06	25	04	006	10035	064							-3242
MCLEAN223	011	03-02-75	1200	40-26 N	081	119.0	0995	0995	04	0995	0600	59	CCAST	110	5094	2654	26	1208	SLOW HEAVY ROLL
61E	42				084-10 W	29.0	06	25	04	006	10035	064							-3411
MCLEAN223	011	03-02-75	1200	40-26 N	081	119.0	0995	0995	04	0995	0600	59	CCAST	115	7199	2898	15	956	SLOW HEAVY ROLL
61E	43				084-10 W	29.0	06	25	04	006	10035	064							-3404
MCLEAN223	011	03-02-75	1200	40-26 N	081	119.0	0995	0995	04	0995	0600	59	CCAST	110	5071	2476	22	1067	SLOW HEAVY ROLL
61E	44				084-10 W	29.0	06	25	04	006	10035	064							-3396
MCLEAN223	012	03-02-75	1000	40-26 N	076	119.4	1263	1263	04	1495	0300	59	CCAST	91	5950	3202	18	1254	-5322
61E	45				084-10 W	29.1	06	25	04	006	10004	062							

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ANALOG	LCGJOK	DATE	TIME	LATITUDE	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG	REL	REL	REL	SHIPS	PROG

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TRIP INTERVAL NUM	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT	TIME GMT
MCLEAN225	015	03-03-75	40-26 N	049-37 W	090	082.0	157S	157S	02	157S	0600	57	PT CLOY	75	8477	4093	0 178
61E	02																
MCLEAN225	016	03-03-75	40-26 N	049-37 W	090	082.0	157S	157S	02	157S	0600	57	PT CLOY	76	9359	4036	0 176
61E	03																
MCLEAN225	016	03-03-75	40-26 N	049-37 W	090	082.0	157S	157S	02	157S	0600	57	PT CLOY	76	9027	4212	0 203
61E	04																
MCLEAN225	017	03-03-75	41-43 N	036-08 W	090	081.0	180	180	02	157S	0600	54	CLEAR	73	6783	3425	0 698
61E	05																
MCLEAN225	017	03-03-75	41-43 N	036-08 W	090	081.0	180	180	02	157S	0600	54	CLEAR	74	6790	3016	0 875
61E	06																
MCLEAN225	017	03-03-75	41-48 N	036-08 W	090	081.0	180	180	02	157S	0600	54	CLEAR	76	6560	3157	0 713
61E	07																
MCLEAN225	017	03-03-75	41-48 N	036-08 W	090	081.0	180	180	02	157S	0600	54	CLEAR	73	5560	4346	0 802
61E	08																
MCLEAN225	018	03-03-75	41-48 N	036-08 W	090	080.9	180	180	01	146S	0600	55	CLEAR	76	7541	3462	0 896
61E	09																
MCLEAN225	018	03-03-75	41-48 N	036-08 W	090	080.9	180	180	01	146S	0600	55	CLEAR	74	5121	3231	0 772
61E	10																
MCLEAN225	018	03-03-75	41-43 N	036-08 W	090	080.9	180	180	01	146S	0600	55	CLEAR	76	7803	3061	0 846
61E	11																
MCLEAN225	018	03-03-75	41-43 N	036-08 W	090	080.9	180	180	01	146S	0600	55	CLEAR	69	5552	3075	0 930
61E	12																
MCLEAN225	019	03-03-75	41-43 N	036-08 W	071	081.0	159P	159P	01	159P	0600	50	CLEAR	83	5835	2823	0 1003
61E	13																
MCLEAN225	019	03-03-75	41-43 N	036-08 W	071	081.0	159P	159P	01	159P	0600	50	CLEAR	76	8400	3090	0 1300
61E	14																
MCLEAN225	019	03-03-75	41-48 N	036-08 W	071	081.0	159P	159P	01	159P	0600	56	CLEAR	75	6040	2036	0 1515
61E	15																
MCLEAN225	019	03-03-75	41-48 N	036-08 W	071	081.0	159P	159P	01	159P	0600	56	CLEAR	69	5937	2602	0 1052
61E	16																
MCLEAN225	020	03-03-75	41-48 N	036-08 W	071	081.5	159P	159P	01	159P	0600	56	CLEAR	69	8204	3254	0 1456
61E	17																

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MCLEAN225 61E 18	03-03-75	41-48 N 2400	036-08 W	071	081.5	159P	159P	04	15	01	159P	0600	004	10190	057	76	5352	2600	0	1515
MCLEAN225 61E 19	03-03-75	41-48 N 2400	036-08 W	071	081.5	159P	159P	04	15	01	159P	0600	004	10190	057	84	5262	2422	0	1493
MCLEAN225 61E 20	03-03-75	41-48 N 2400	036-08 W	071	081.5	159P	159P	04	15	01	159P	0600	004	10190	057	76	6025	2734	0	1440
MCLEAN225 61E 21	03-04-75	41-48 N 0400	036-08 W	071	081.5	159P	159P	03	10	01	159P	0600	003	10180	056	84	4524	2414	0	1329
MCLEAN225 61E 22	03-04-75	41-48 N 0400	036-08 W	071	081.5	159P	159P	03	10	01	159P	0600	003	10160	056	84	5353	2316	0	1337
MCLEAN225 61E 23	03-04-75	41-48 N 0400	036-08 W	071	081.5	159P	159P	03	10	01	159P	0600	003	10130	056	67	5327	2890	0	1574
MCLEAN225 61E 24	03-04-75	41-48 N 0400	036-08 W	071	081.5	159P	159P	03	10	01	159P	0600	003	10130	056	77	5601	2231	0	1315
MCLEAN225 61E 25	03-04-75	41-48 N 0800	036-08 W	071	080.5	159P	159P	04	15	01	159P	0600	003	10162	058	86	5096	2037	0	1186
MCLEAN225 61E 26	03-04-75	41-48 N 0600	036-08 W	071	080.5	159P	159P	04	15	01	159P	0600	003	10182	058	82	4561	2182	0	1240
MCLEAN225 61E 27	03-04-75	41-48 N 0800	036-08 W	071	080.5	159P	159P	04	15	01	159P	0600	003	10182	058	73	5445	2318	0	1255
MCLEAN225 61E 28	03-04-75	41-48 N 0600	036-08 W	071	080.5	159P	159P	04	15	01	159P	0600	003	10182	058	87	4217	1998	0	1203
MCLEAN225 61E 29	03-04-75	41-48 N 1200	026-00 W	071	081.0	159P	159P	04	15	01	159P	0600	003	10183	060	75	4175	2510	0	1017
MCLEAN225 61E 30	03-04-75	41-48 N 1200	026-00 W	071	081.0	159P	159P	04	15	01	159P	0600	003	10183	060	72	5416	2526	0	983
MCLEAN225 61E 31	03-04-75	41-48 N 1200	026-00 W	071	081.0	159P	159P	04	15	01	159P	0600	003	10183	060	70	4651	2510	0	1010
MCLEAN225 61E 32	03-04-75	41-48 N 1200	026-00 W	071	081.0	159P	159P	04	15	01	159P	0600	003	10183	060	75	4442	2191	0	1047
MCLEAN225 61E 33	03-04-75	41-48 N 1600	026-00 W	071	080.5	159P	159P	03	10	01	159P	0600	003	10166	059	75	4115	2486	0	1399

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ANALOG LOGBOOK TYPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	REL WIND DIR	REL WAVE DIR	REL WAVE SECS	SWELL MT	SWELL FEET	SEA TEMP	WEATHER	MAX STRESS PSI	NUMBER OF BURSTS	COMMENTS
MCLEAN227 034 61E 07	03-05-75	2400	46-12 N	015-42 W	071	000.0	131S	131S	01	002	0800	52	CCAST	77	4137	0 103
MCLEAN227 032 61E 08	03-05-75	2470	46-12 N	015-42 W	071	000.0	131S	131S	01	002	0800	52	CCAST	84	3064	0 61
MCLEAN227 023 61E 09	03-06-75	0420	46-12 N	015-42 W	071	000.0	131S	131S	01	002	0800	51	CCAST	83	3045	0 59
MCLEAN227 033 61E 10	03-06-75	0430	46-12 N	015-42 W	071	000.0	131S	131S	01	002	0800	51	CCAST	76	3454	0 103
MCLEAN227 035 61E 11	03-06-75	0430	46-12 N	015-42 W	071	000.0	131S	131S	01	002	0800	51	CCAST	89	2900	0 103
MCLEAN227 033 61E 12	03-06-75	0400	46-12 N	015-42 W	071	000.0	131S	131S	01	002	0800	51	CCAST	85	3590	0 111
MCLEAN227 034 61E 13	03-06-75	0300	46-12 N	015-42 W	071	059.0	131S	131S	01	002	0800	51	CCAST	80	4123	0 74
MCLEAN227 034 61E 14	03-06-75	0300	46-12 N	015-42 W	071	059.0	131S	131S	01	002	0800	51	CCAST	77	3254	0 74
MCLEAN227 034 61E 15	03-06-75	0300	46-12 N	015-42 W	071	059.0	131S	131S	01	002	0800	51	CCAST	74	3533	0 51
MCLEAN227 034 61E 16	03-06-75	0300	46-12 N	015-42 W	071	059.0	131S	131S	01	002	0800	51	CCAST	80	3549	0 102
MCLEAN227 035 61E 17	03-06-75	1200	46-13 N	007-03 W	071	000.0	131S	131S	01	002	0800	50	CCAST	80	3549	0 59
MCLEAN227 035 61E 18	03-06-75	1200	46-13 N	007-03 W	071	000.0	131S	131S	01	002	0800	50	CCAST	73	3190	0 140
MCLEAN227 035 61E 19	03-06-75	1200	46-13 N	007-03 W	071	000.0	131S	131S	01	002	0800	50	CCAST	51	3713	0 118
MCLEAN227 035 61E 20	03-06-75	1200	46-13 N	007-03 W	071	050.0	131S	131S	01	002	0800	50	CCAST	83	3723	0 103
MCLEAN227 036 61E 21	03-06-75	1600	46-13 N	007-03 W	071	000.0	131S	131S	01	002	0800	50	CCAST	77	3133	0 125
MCLEAN227 036 61E 22	03-06-75	1600	46-13 N	007-03 W	071	000.0	131S	131S	01	002	0800	50	CCAST	70	3133	0 170

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ANALOG TAPE NUMBER	LCGBOOK INDEA NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	SHIPS RPM	REL WAVE DIR	REL WAVE PO	REL WAVE SECS	SWELL MT	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	NUMBER OF BURSTS	P-T-O-T	MAX STRESS PSI	COMMENTS
MCLEAN229	61W 38	03-12-75	2400	44-15 N	017-36 W	244	120.0	0035	0035	01	019P	0600	53	CCAST	147	1704	0	0	1428		
MCLEAN229	61W 39	03-12-75	2400	44-15 N	017-36 W	244	120.0	0035	0035	01	019P	0600	53	CCAST	161	1621	1	069	-1415		
MCLEAN229	61W 40	03-12-75	2400	44-15 N	017-36 W	244	120.0	0035	0035	01	019P	0600	53	CCAST	156	1873	2	046	-1405		
MCLEAN229	61W 41	03-13-75	0400	44-15 N	017-36 W	244	120.4	042P	042P	01	019P	0400	55	CCAST	169	1657	0	0	-1480		
MCLEAN229	61W 42	03-13-75	0400	44-15 N	017-36 W	244	120.4	042P	042P	01	019P	0400	55	CCAST	142	1709	0	0	-1487		
MCLEAN229	61W 43	03-13-75	0400	44-15 N	017-36 W	244	120.4	042P	042P	01	019P	0400	55	CCAST	131	1717	0	0	-1480		
MCLEAN229	61W 44	03-13-75	0400	44-15 N	017-36 W	244	120.4	042P	042P	01	019P	0400	55	CCAST	131	1538	0	0	-1547		
MCLEAN229	61W 45	03-13-75	0800	44-15 N	017-36 W	238	120.6	036P	036P	01	013P	0400	56	CCAST RAIN SHOWERS	116	1278	1	639	-1569		
MCLEAN229	61W 46	03-13-75	0800	44-15 N	017-36 W	238	120.6	036P	036P	01	013P	0400	56	CCAST RAIN SHOWERS	120	1332	0	0	-1532		
MCLEAN229	61W 47	03-13-75	0800	44-15 N	017-36 W	238	120.6	036P	036P	01	013P	0400	56	CCAST RAIN SHOWERS	129	1248	0	0	-1487		
MCLEAN229	61W 48	03-13-75	0800	44-15 N	017-36 W	238	120.6	036P	036P	01	013P	0400	56	CCAST RAIN SHOWERS	125	1360	0	0	-1495		
MCLEAN229	61W 49	03-13-75	1200	38-53 N	032-04 W	246	120.5	055P	055P	01	021P	0400	55	PT CLOUD	101	1390	0	0	-729		
MCLEAN229	61W 50	03-13-75	1200	38-53 N	032-04 W	246	120.5	055P	055P	01	021P	0400	55	PT CLOUD	101	1456	0	0	-595		
MCLEAN229	61W 51	03-13-75	1200	38-53 N	032-04 W	246	120.5	055P	055P	01	021P	0400	55	PT CLOUD	174	1739	1	869	-326		
MCLEAN229	61W 52	03-13-75	1200	38-53 N	032-04 W	246	120.5	055P	055P	01	021P	0400	55	PT CLOUD	163	1687	0	0	-387		
MCLEAN229	61W 53	03-13-75	1600	38-53 N	032-04 W	273	121.0	062P	082P	01	043P	0400	59	PT CLOUD	158	1604	1	1531	-603		

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ANALOG TAPE NUMBER	LOGBOOK INDEX NUMBER	DATE	TIME GMT	LATITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE PD	REL WAVE DIR	REL WAVE SECS	SWELL HT FEET	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS
TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE PD	REL WAVE DIR	REL WAVE SECS	SWELL HT FEET	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI	COMMENTS	
MCLEAN229	014	03-13-75	38-53 N	032-04 W	273	121.0	082P	082P	01	048P	0400	59	PT CLOUD	106	2742	1250	0	0	-595	
61W	54	1600																		
MCLEAN229	014	03-13-75	38-53 N	032-04 W	273	121.0	082P	082P	01	048P	0400	59	PT CLOUD	156	2891	1375	0	0	-505	
61W	55	1600																		
MCLEAN229	014	03-13-75	38-53 N	032-04 W	273	121.0	082P	082P	01	048P	0400	59	PT CLOUD	143	2973	1352	0	0	-595	
61W	56	1600																		
MCLEAN229	015	03-13-75	38-53 N	032-04 W	273	120.6	087S	087S	01	087S	0400	60	PT CLOUD	147	2505	1211	0	0	-730	
61W	57	2000																		
MCLEAN229	015	03-13-75	38-53 N	032-04 W	273	120.6	087S	087S	01	087S	0400	60	PT CLOUD	131	3040	1315	0	0	-647	
61W	58	2000																		
MCLEAN229	015	03-13-75	38-53 N	032-04 W	273	120.6	087S	087S	01	087S	0400	60	PT CLOUD	136	2737	1367	0	0	-530	
61W	59	2000																		
MCLEAN229	015	03-13-75	38-53 N	032-04 W	273	120.6	087S	087S	01	087S	0400	60	PT CLOUD	143	3330	1516	0	0	-558	
61W	60	2000																		
MCLEAN229	016	03-13-75	38-53 N	032-04 W	273	069.1	087S	087S	01	087S	0400	55	PT CLOUD	129	5753	2438	0	0	750	
61W	61	2400																		
MCLEAN229	016	03-13-75	38-53 N	032-04 W	273	069.1	087S	087S	01	087S	0400	55	PT CLOUD	140	6474	2475	0	0	639	
61W	62	2400																		
MCLEAN229	016	03-13-75	38-53 N	032-04 W	273	069.1	087S	087S	01	087S	0400	55	PT CLOUD	144	5731	2601	0	0	644	
61W	63	2400																		
MCLEAN229	016	03-13-75	38-53 N	032-04 W	273	069.1	087S	087S	01	087S	0400	55	PT CLOUD	137	5262	2371	0	0	654	
61W	64	2400																		
MCLEAN231	017	03-14-75	38-53 N	032-04 W	273	069.0	154S	154S	01	087S	0600	59	CLEAR	144	4827	1909	0	0	0	
61W	01	0400																		
MCLEAN231	017	03-14-75	38-53 N	032-04 W	273	069.0	154S	154S	01	087S	0600	59	CLEAR	133	4078	1887	0	0	29	
61W	02	0400																		
MCLEAN231	017	03-14-75	38-53 N	032-04 W	273	069.0	154S	154S	01	087S	0600	59	CLEAR	140	4490	1849	0	0	-9	
61W	03	0400																		
MCLEAN231	017	03-14-75	38-53 N	032-04 W	273	069.0	154S	154S	01	087S	0600	59	CLEAR	133	4543	1827	0	0	-82	
61W	04	0400																		
MCLEAN231	018	03-14-75	38-53 N	032-04 W	273	069.0	098S	098S	01	087S	0600	59	CLEAR	155	4324	1775	0	0	-142	
61W	05	0800																		

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ANALOG TAPE NUMBER	LCGBOOK INDEX	DATE	TIME GMT	LATITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE PD	REL WAVE SECS	REL WAVE DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	PMS STRESS PSI	MAX STRESS PSI	COMMENTS
TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE PD	REL WAVE SECS	REL WAVE DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	PMS STRESS PSI	MAX STRESS PSI	COMMENTS	
MCLEAN231	027	03-15-75	39-29 N	052-40 W	273	070.0	048P	048P	06	048P	0400	58	CCAST	161	6590	2979	15 2555 14
61W	43	2000								006	10085	060					
MCLEAN231	027	03-15-75	39-29 N	052-40 W	273	070.0	048P	048P	06	048P	0400	58	CCAST	180	9212	3070	31 2228 59
61W	44	2000								006	10035	050					
MCLEAN231	028	03-15-75	39-29 N	052-40 W	273	068.0	048P	048P	10	048P	0600	63	CCAST	169	10074	4398	35 2345 44
61W	45	2400								010	10058	062					
MCLEAN231	028	03-15-75	39-29 N	052-40 W	273	068.0	048P	048P	10	048P	0600	63	CCAST	166	9413	4101	37 2184 74
61W	46	2400								010	10058	062					
MCLEAN231	028	03-15-75	39-29 N	052-40 W	273	068.0	048P	048P	10	048P	0600	63	CCAST	172	9086	3982	45 2135 113
61W	47	2400								010	10058	062					
MCLEAN231	023	03-15-75	39-29 N	052-40 W	273	063.0	048P	048P	10	048P	0600	63	CCAST	159	10334	4576	49 2425 193
61W	48	2400								010	10058	062					
MCLEAN231	029	03-16-75	39-29 N	052-40 W	273	067.0	003P	003P	20	003P	0600	65	CCAST	164	11642	4918	45 3335 312
61W	49	0400								020	10085	052					
MCLEAN231	029	03-16-75	39-29 N	052-40 W	273	067.0	003P	003P	20	003P	0600	65	CCAST	158	13581	5512	54 3922 378
61W	50	0400								020	10085	052					
MCLEAN231	029	03-16-75	39-29 N	052-40 W	273	067.0	003P	003P	20	003P	0600	65	CCAST	159	12490	5267	50 2570 453
61W	51	0400								020	10035	052					
MCLEAN231	029	03-16-75	39-29 N	052-40 W	273	067.0	003P	003P	20	003P	0600	65	CCAST	161	12623	5215	60 3908 437
61W	52	0400								020	10085	052					
MCLEAN231	030	03-16-75	39-29 N	052-40 W	270	070.5	0225	0225	20	000	0600	61	CCAST	144	13527	5943	69 2778 359
61W	53	0800								020	10139	055					
MCLEAN231	030	03-16-75	39-29 N	052-40 W	270	070.5	0225	0225	20	000	0600	61	CCAST	142	13403	6240	60 4273 341
61W	54	0600								020	10139	055					
MCLEAN231	030	03-16-75	39-29 N	052-40 W	270	070.5	0225	0225	20	000	0600	61	CCAST	158	17704	7325	69 2994 401
61W	55	0600								020	10139	055					
MCLEAN231	030	03-16-75	39-29 N	052-40 W	270	070.5	0225	0225	20	000	0600	61	CCAST	139	18299	8380	69 7592 312
61W	56	0600								020	10139	055					
MCLEAN231	031	03-16-75	39-29 N	050-37 W	270	070.0	0675	0675	20	000	0600	58	CCAST	190	18600	8506	60 7085 0
61W	01	1200								020	10209	055					
MCLEAN231	031	03-16-75	39-29 N	050-37 W	270	070.0	0675	0675	20	000	0600	58	CCAST	151	15400	7999	63 5237 -90
61W	02	1200								020	10209	055					

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ANALOG LOGBOOK TAPE INDEX NUMBER	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	REL WIND DIR	REL WAVE DIR	REL WAVE SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	COMMENTS
TRIP INTERVAL MIN																	
031	03-16-75	1200	39-54 N	060-37 W	17.0	08	40	20		000	0600	50	055	1753	3090	66	MANUAL RUN -223
031	03-16-75	1200	39-54 N	060-37 W	17.0	08	40	20		000	0600	50	055	19680	7236	68	MANUAL RUN -305
032	03-16-75	1400	39-54 N	060-37 W	17.1	07	35	15		0675	0500	50	053	17370	7576	72	-275
032	03-16-75	1400	39-54 N	060-37 W	17.1	07	35	15		0675	0600	60	053	13960	6396	82	-327
032	03-16-75	1400	39-54 N	060-37 W	17.1	07	35	15		0675	0600	50	053	16820	6733	58	-290
032	03-16-75	1400	39-54 N	060-37 W	17.1	07	35	15		0675	0600	60	053	16434	5460	53	-342
033	03-16-75	1600	39-54 N	060-37 W	17.1	06	25	10		0675	0600	64	PT CLOUDY	14094	5765	59	-320
033	03-16-75	1600	39-54 N	060-37 W	17.1	06	25	10		0675	0600	64	PT CLOUDY	10839	4460	34	-272
033	03-16-75	1600	39-54 N	060-37 W	17.1	06	25	10		0675	0600	64	PT CLOUDY	10193	4420	37	-227
033	03-16-75	1600	39-54 N	060-37 W	17.1	06	25	10		0675	0600	64	PT CLOUDY	11464	3856	24	-350
034	03-16-75	1800	39-54 N	060-37 W	17.1	06	25	10		0675	0600	64	PT CLOUDY	7803	3662	35	-379
034	03-16-75	1800	39-54 N	060-37 W	17.1	06	25	10		0675	0600	64	PT CLOUDY	8707	3558	22	-424
034	03-16-75	1800	39-54 N	060-37 W	17.1	06	25	10		0675	0600	64	PT CLOUDY	3290	3531	21	-377
034	03-16-75	1800	39-54 N	060-37 W	17.1	06	25	10		0675	0600	64	PT CLOUDY	8937	3373	19	-402
035	03-16-75	2000	39-54 N	060-37 W	17.6	05	20	10		0675	0600	66	PT CLOUDY	3731	3009	5	END MANUAL RECORD -305
035	03-16-75	2000	39-54 N	060-37 W	17.6	05	20	10		0675	0600	66	PT CLOUDY	8403	3165	17	END MANUAL RECORD -223

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ANALOG LCGBOOK TAPE INDEX NUMBER	TRIP INTERVAL NUM	DATE	TIME GMT	LATITUDE	LONGITUDE	SHIPS COURSE	PROG RPM	SEA STATE	REL WIND DIR	REL WAVE DIR	REL WAVE PER SECS	SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MAX BURSTS	COMMENTS		
MCLEAN233 S1W 19	035	03-16-75	2000	39-54 N	060-37 W	270	072.5	067S	067S	20	10	067S	0600	010	10260 045	PT CLOUD	173	5715	2630	16	905	END MANUAL RECORD
MCLEAN233 S1W 20	035	03-16-75	2000	39-54 N	060-37 W	270	072.5	067S	067S	20	10	067S	0600	010	10260 045	PT CLOUD	185	5059	2628	10	1062	END MANUAL RECORD
MCLEAN233 S1W 21	036	03-16-75	2400	39-54 N	060-37 W	270	074.1	067S	067S	15	06	067S	0600	006	10246 049	PT CLOUD	149	4041	1864	3	668	-261
MCLEAN233 S1W 22	036	03-16-75	2400	39-54 N	060-37 W	270	074.1	067S	067S	15	06	067S	0600	006	10246 049	PT CLOUD	133	3841	1708	0	0	-164
MCLEAN233 S1W 23	036	03-16-75	2400	39-54 N	060-37 W	270	074.1	067S	067S	15	06	067S	0600	006	10246 049	PT CLOUD	145	2974	1426	0	0	-186
MCLEAN233 S1W 24	036	03-16-75	2400	39-54 N	060-37 W	270	074.1	067S	067S	15	06	067S	0600	006	10246 049	PT CLOUD	138	2644	1411	0	0	-216
MCLEAN233 S1W 25	037	03-17-75	0400	39-54 N	060-37 W	270	071.0	067S	067S	10	02	067S	0300	002	10220 053	PT CLOUD	123	2927	1107	0	0	-253
MCLEAN233 S1W 26	037	03-17-75	0400	39-54 N	060-37 W	270	071.0	067S	067S	10	02	067S	0300	002	10220 053	PT CLOUD	132	1983	905	0	0	-253
MCLEAN233 S1W 27	037	03-17-75	0400	39-54 N	060-37 W	270	071.0	067S	067S	10	02	067S	0300	002	10220 053	PT CLOUD	116	2889	950	0	0	-186
MCLEAN233 S1W 28	037	03-17-75	0400	39-54 N	060-37 W	270	071.0	067S	067S	10	02	067S	0300	002	10220 053	PT CLOUD	107	2280	1340	0	0	-194
MCLEAN233 S1W 29	038	03-17-75	0800	39-54 N	060-37 W	270	072.0	067S	067S	05	01	067S	0500	001	10219 044	PT CLOUD	105	2347	1032	0	0	-249
MCLEAN233 S1W 30	038	03-17-75	0800	39-54 N	060-37 W	270	072.0	067S	067S	05	01	067S	0500	001	10219 044	PT CLOUD	94	1509	760	0	0	-201
MCLEAN233 S1W 31	038	03-17-75	0800	39-54 N	060-37 W	270	072.0	067S	067S	05	01	067S	0500	001	10219 044	PT CLOUD	106	1240	609	0	0	-186
MCLEAN233 S1W 32	038	03-17-75	0800	39-54 N	060-37 W	270	072.0	067S	067S	05	01	067S	0500	001	10219 044	PT CLOUD	103	1243	624	0	0	-223
MCLEAN233 S1W 33	039	03-17-75	1200	39-54 N	060-37 W	270	068.0	064S	064S	05	01	067S	0300	001	10210 045	PT CLOUD	111	801	450	0	0	-23
MCLEAN233 S1W 34	039	03-17-75	1200	39-54 N	060-37 W	270	068.0	064S	064S	05	01	067S	0300	001	10210 045	PT CLOUD	91	1040	527	0	0	-142

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ANALOG TAPE NUMBER	LCGBOGA INDEX NUM	DATE	LATITUDE	SHIPS COURSE	PROP RPM	REL WIND DIR	REL WAVE DIR	REL WAVE PD	REL WAVE SECS	REL SWELL DIR	SWELL LENGTH FEET	SEA TEMP	WEATHER	MAX P-TG-T STRESS PSI	NUMBER OF BURSTS	COMMENTS	
TRIP INTERVAL NUM	TIME GMT	LONGITUDE	SHIPS SPEED KTS	SEA STATE	REL WIND SPEED	REL WAVE HT	REL WAVE FT	REL WAVE LNG	REL WAVE FT	SWELL HT FEET	SWELL INCH HG	AIR TEMP	BAROM HG	NUMBER CYCLES	RMS STRESS PSI	MAX STRESS PSI	MEAN STRESS PSI
---HAVE IND-- 1ST MODE																	

APPENDIX B

PARAMETRIC STUDIES

This appendix contains the plots and tabulated summaries resulting from the parametric studies program "SPLOT." Each plot presents either a five-curve family of various ship speeds or a five-curve family of relative wave direction groups for a transducer output vs. Beaufort Number. Within each Beaufort Number the magnitude of a particular point is determined by calculating the mean of the data set or the mean of the one-third highest values within the data set. A superscribed note on each plot designates which value is applicable. The key on each plot also indicates which type (Ship Speed or Relative Wave Direction) is presented.

The measured data set is composed of the maximum wave-induced peak-to-trough value within each 30-minute data interval, or the RMS value determined for that interval. The graph title notes which characterization is applicable.

In addition to the Third Season Longitudinal Vertical Bending (LBV) signal, some parametric studies were run using data compiled from all three data acquisition seasons.

Each tabulated summary presents a listing of all plotted points along with the number of data points along with the number of data points comprising each plotted mean point and its standard deviation.

Table B provides an index for all parametric plots and summaries.

SYMBOL	SHIP SPD, Kts
○	0-15
△	16-20
+	21-25
×	26-30
◇	31-35

SYMBOL	REL SEA DIR.
○	0-30
△	31-60
+	61-120
×	121-150
◇	151-180

TABLE B

Index of Results of Digitized wave-Induced
Longitudinal Vertical Bending Stress
Parametric Studies

Value Derived from Each Interval	Sorted by	Third Season Data						Three Season Data					
		Plots by Calculating:			Tabular * Summary of			Plots by Calculating:			Tabular * Summary of		
		Mean	RMS	1/3 Highest	Mean or RMS	1/3 Highest	Dot Plots	Mean	RMS	1/3 Highest	Mean or RMS	1/3 Highest	Dot Plots
Max.	Ship's Speed	1	3	5	I	III	7	17	19	21	IX	XI	23
	Relative Wave Direction	2	4	6	II	IV	8	18	20	22	X	XII	24
RMS	Ship's Speed	9	11	13	V	VII	15	-	-	-	-	-	-
	Relative Wave Direction	10	12	14	VI	VIII	16	-	-	-	-	-	-

*Includes number of points constituting each average and standard deviation of each mean.

MAX WAVE-INDUCED MID VENT, BENDING STRESS VS BEAUFORT NO., WHELAN THIRD SEASON

TABLE B-1

SHIP SPEED BETWEEN 0.0 AND 15.0		PLOT SYMBOL OCTAGONAL			
BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	2	951.	955.	90.	
2	4	1271.	1331.	195.	
3	29	3319.	3302.	530.	
4	0				
5	0				
6	0				
7	0				
8	0				
9	0				
10	0				
11	0				
12	0				

SHIP SPEED BETWEEN 15.0 AND 20.0		PLOT SYMBOL TRIANGLE			
BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	24	4394.	4724.	1736.	
2	43	4778.	4960.	1435.	
3	67	5181.	5437.	1644.	
4	56	5660.	5851.	1481.	
5	58	4657.	5154.	2209.	
6	28	7520.	7666.	2935.	
7	20	10792.	11291.	3320.	
8	4	19020.	19046.	1002.	
9	4	17433.	17478.	1245.	
10	0				
11	0				
12	0				

SHIP SPEED BETWEEN 20.0 AND 25.0		PLOT SYMBOL PLUS			
BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	8	6384.	6485.	1144.	
2	24	4787.	5716.	3124.	
3	25	6111.	6598.	2486.	
4	8	3767.	4398.	2270.	
5	24	5870.	6169.	1896.	
6	24	5545.	6208.	2918.	
7	12	7457.	8566.	3225.	
8	8	6057.	6400.	2068.	
9	0				
10	0				
11	0				
12	0				

SHIP SPEED BETWEEN 25.0 AND 30.0		PLOT SYMBOL X			
BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	8	3243.	3200.	327.	
2	24	2730.	3227.	1720.	
3	12	5149.	5901.	2443.	
4	24	5395.	5749.	1088.	
5	12	7530.	8882.	4711.	
6	52	5704.	5972.	1767.	
7	44	6841.	7663.	3451.	
8	16	7074.	7254.	1607.	
9	4	13735.	13865.	1894.	
10	0				
11	0				
12	0				

SHIP SPEED BETWEEN 30.0 AND 35.0		PLOT SYMBOL DIAMOND			
BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	0				
2	20	4681.	4969.	1666.	
3	4	3893.	3927.	518.	
4	32	4803.	5376.	2422.	
5	14	3913.	4087.	1181.	
6	46	6352.	6756.	2300.	
7	43	7565.	8012.	2638.	
8	8	6107.	6250.	1328.	
9	0				
10	0				
11	0				
12	0				

MAX WAVE-INDUCED MID VERT. BENDING STRESS 'A' BEAUFORT NO. MCLEAN THIRD SEASON

RELATIVE WAVE DIRECTION BETWEEN 0.0 AND 31.0 PLOT SYMBOL OCTAGONAL

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	16	5533.	5573.	665.
2	12	2039.	3401.	1827.
3	8	5151.	5210.	804.
4	12	6520.	7072.	2741.
5	14	5893.	7210.	4162.
6	36	5131.	5831.	2770.
7	43	9736.	10012.	2335.
8	8	7865.	8081.	1859.
9	8	15584.	15775.	2407.
10	0			
11	0			
12	0			

TABLE B-II

RELATIVE WAVE DIRECTION BETWEEN 31.0 AND 61.0 PLOT SYMBOL TRIANGLE

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	8	3009.	3045.	462.
2	16	6750.	6998.	1847.
3	16	5210.	5605.	2068.
4	12	3218.	3826.	2070.
5	12	4737.	5911.	3536.
6	20	7556.	7642.	1145.
7	20	4653.	5799.	3461.
8	8	4849.	4930.	890.
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN 61.0 AND 121.0 PLOT SYMBOL PLUS

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	10	4243.	4996.	2638.
2	40	3441.	3889.	1811.
3	24	3247.	3876.	2106.
4	40	4914.	5129.	1471.
5	29	3863.	4430.	2168.
6	32	6308.	7004.	3045.
7	24	7792.	8985.	4474.
8	20	9243.	10527.	5037.
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN 121.0 AND 151.0 PLOT SYMBOL X

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	0			
2	11	4746.	5225.	2187.
3	33	4015.	4920.	2171.
4	24	5028.	6087.	1586.
5	20	4601.	5077.	2146.
6	36	6053.	6506.	2386.
7	24	7741.	7871.	1313.
8	0			
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN 151.0 AND 180.0 PLOT SYMBOL DIAMOND

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	0			
2	32	4370.	4718.	1034.
3	50	5025.	6006.	1664.
4	32	5057.	5791.	1039.
5	33	6046.	6518.	968.
6	36	6522.	6488.	1462.
7	8	6581.	6403.	1726.
8	0			
9	0			
10	0			
11	0			
12	0			

MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO., -MCLEAN THIRD SEASON
FOR HIGHEST 1/3 VALUES

TABLE B-III

SHIP SPEED BETWEEN BEAUFORT NUMBER	0.0 AND 15.0 NO OF DATA POINTS	PLOT SYMBOL OCTAGONAL MEAN ST. DEVIATION
1	0	
2	1	1643.
3	0	1673.
4	0	
5	0	
6	0	
7	0	
8	0	
9	0	
10	0	
11	0	
12	0	

SHIP SPEED BETWEEN BEAUFORT NUMBER	15.0 AND 20.0 NO OF DATA POINTS	PLOT SYMBOL TRIANGLE MEAN ST. DEVIATION
1	8	6043.
2	14	6340.
3	22	6655.
4	18	7314.
5	19	6808.
6	9	10267.
7	6	15099.
8	1	19696.
9	1	16403.
10	0	
11	0	
12	0	

SHIP SPEED BETWEEN BEAUFORT NUMBER	20.0 AND 25.0 NO OF DATA POINTS	PLOT SYMBOL PLUS MEAN ST. DEVIATION
1	2	7887.
2	8	8311.
3	9	8240.
4	2	6505.
5	6	7593.
6	8	8478.
7	4	10976.
8	2	8348.
9	0	
10	0	
11	0	
12	0	

SHIP SPEED BETWEEN BEAUFORT NUMBER	25.0 AND 30.0 NO OF DATA POINTS	PLOT SYMBOL X MEAN ST. DEVIATION
1	2	3694.
2	8	4698.
3	4	6980.
4	8	7080.
5	4	12116.
6	17	7674.
7	14	10757.
8	5	9139.
9	1	16220.
10	0	
11	0	
12	0	

SHIP SPEED BETWEEN BEAUFORT NUMBER	30.0 AND 35.0 NO OF DATA POINTS	PLOT SYMBOL DIAMOND MEAN ST. DEVIATION
1	0	
2	6	6892.
3	1	4727.
4	10	7450.
5	4	5503.
6	18	8792.
7	14	9084.
8	2	7890.
9	0	
10	0	
11	0	
12	0	

MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.,-MCLEAN THIRD SEASON
FOR HIGHEST 1/3 VALUES

TABLE B-IV

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	0.0 AND 31.0 MEAN	31.0 ST. DEVIATION	PLOT SYMBOL OCTAGONAL
1	9	6197.	218.	
2	4	4757.	558.	
3	2	6116.	151.	
4	4	10061.	1511.	
5	4	12007.	1017.	
6	12	8360.	1143.	
7	14	12578.	1039.	
8	2	9609.	50.	
9	2	18351.	52.	
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	31.0 AND 61.0 MEAN	61.0 ST. DEVIATION	PLOT SYMBOL TRIANGLE
1	2	3675.	249.	
2	5	8377.	189.	
3	5	7572.	215.	
4	4	5979.	669.	
5	4	9378.	1442.	
6	6	8853.	326.	
7	6	9200.	1049.	
8	2	5954.	342.	
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	61.0 AND 121.0 MEAN	121.0 ST. DEVIATION	PLOT SYMBOL PLUS
1	4	7287.	698.	
2	14	5805.	811.	
3	8	5763.	732.	
4	13	6634.	931.	
5	9	6073.	565.	
6	10	9797.	1819.	
7	8	12947.	3849.	
8	6	15563.	4959.	
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	121.0 AND 151.0 MEAN	151.0 ST. DEVIATION	PLOT SYMBOL X
1	0			
2	1	6837.	552.	
3	11	6868.	2119.	
4	8	7520.	887.	
5	6	7214.	653.	
6	12	8740.	1104.	
7	8	9257.	440.	
8	0			
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	151.0 AND 180.0 MEAN	180.0 ST. DEVIATION	PLOT SYMBOL DIAMOND
1	0			
2	10	6388.	1497.	
3	10	7498.	908.	
4	10	7605.	810.	
5	11	7680.	531.	
6	12	8240.	880.	
7	2	8719.	29.	
8	0			
9	0			
10	0			
11	0			
12	0			

R-15 WAVE-INDUCED MID VERT. BENDING STRESS VS HEADPORT NO., MCLEAN THIRD SEASON

TABLE B-V

SHIP SPEED BETWEEN 0.0 AND 15.0 PLOT SYMBOL OCTAGONAL

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	2	479.	481.	49.
2	4	610.	644.	207.
3	20	1540.	1598.	243.
4	0			
5	0			
6	0			
7	0			
8	0			
9	0			
10	0			
11	0			
12	0			

SHIP SPEED BETWEEN 15.0 AND 20.0 PLOT SYMBOL TRIANGLE

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	24	2109.	2267.	431.
2	43	2217.	2312.	655.
3	67	2406.	2591.	796.
4	56	2619.	2887.	602.
5	58	2191.	2425.	1039.
6	28	3254.	3453.	1155.
7	20	4546.	4732.	1314.
8	4	7945.	7958.	458.
9	4	6972.	7038.	962.
10	0			
11	0			
12	0			

SHIP SPEED BETWEEN 20.0 AND 25.0 PLOT SYMBOL PLUS

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	8	2651.	2667.	293.
2	24	2181.	2582.	1381.
3	28	2915.	3164.	1228.
4	8	1865.	2203.	1173.
5	24	2899.	3044.	928.
6	24	2651.	2978.	1348.
7	12	3206.	3422.	1198.
8	8	2684.	2815.	849.
9	0			
10	0			
11	0			
12	0			

SHIP SPEED BETWEEN 25.0 AND 30.0 PLOT SYMBOL X

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	8	1520.	1527.	148.
2	24	1192.	1381.	697.
3	12	2248.	2527.	1154.
4	24	2524.	2715.	909.
5	12	2855.	3306.	1667.
6	52	2535.	2624.	679.
7	44	2857.	3119.	1251.
8	16	3128.	3181.	578.
9	4	5504.	5541.	816.
10	0			
11	0			
12	0			

SHIP SPEED BETWEEN 30.0 AND 35.0 PLOT SYMBOL DIAMOND

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	0			
2	20	1909.	1975.	405.
3	4	1722.	1723.	40.
4	32	1942.	2160.	878.
5	14	1662.	1733.	492.
6	56	2745.	2917.	987.
7	43	3314.	3479.	1061.
8	8	2459.	2470.	233.
9	0			
10	0			
11	0			
12	0			

RMS WAVE-INDUCED MID VERT. BENDING STRESS VS. HEADPORT NO.-MCLEAN THIRD BEASON

TABLE B-VI

RELATIVE WAVE DIRECTION BETWEEN 0.0 AND 31.0 PLOT SYMBOL OCTAGONAL

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	16	2669.	2680.	247.
2	12	1279.	1479.	742.
3	4	2396.	2461.	559.
4	12	2629.	2771.	873.
5	14	2311.	2738.	1469.
6	36	2181.	2438.	1091.
7	43	3010.	3984.	742.
8	8	3262.	3341.	721.
9	8	6238.	6334.	1097.
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN 31.0 AND 61.0 PLOT SYMBOL TRIANGLE

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	8	1436.	1454.	231.
2	16	2832.	2954.	841.
3	16	2578.	2427.	1162.
4	12	1511.	1465.	1093.
5	12	1872.	2249.	1246.
6	20	3263.	3294.	450.
7	20	2020.	2503.	1478.
8	8	2095.	2111.	261.
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN 61.0 AND 121.0 PLOT SYMBOL PLUS

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	14	1800.	2066.	1014.
2	44	1523.	1703.	761.
3	24	1461.	1765.	991.
4	40	2146.	2232.	612.
5	24	1845.	2120.	1044.
6	32	2740.	2980.	1173.
7	24	3285.	3721.	1748.
8	20	4006.	4486.	2020.
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN 121.0 AND 151.0 PLOT SYMBOL X

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	0			
2	11	2221.	2452.	1039.
3	33	2016.	2198.	875.
4	24	2783.	2852.	621.
5	20	2105.	2313.	950.
6	36	2766.	2969.	1078.
7	24	3637.	3688.	611.
8	0			
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN 151.0 AND 180.0 PLOT SYMBOL DIAMOND

HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	0			
2	32	2625.	2206.	876.
3	50	2788.	2854.	610.
4	32	2571.	2729.	918.
5	33	3143.	3179.	478.
6	36	3035.	3110.	680.
7	8	2868.	2978.	787.
8	0			
9	0			
10	0			
11	0			
12	0			

RMS WAVE-INDUCED MID VENT, BENDING STRESS VS BEAUFORT NO., -MCLEAN THIRD SEASON
FOR HIGHEST 1/3 VALUES

TABLE B-VII

SHIP SPEED BETWEEN 0.0 AND 15.0 PLOT SYMBOL OCTAGONAL
BEAUFORT NO OF DATA MEAN ST. DEVIATION
NUMBER POINTS

1	0		
2	1	866.	0.
3	9	1812.	71.
4	0		
5	0		
6	0		
7	0		
8	0		
9	0		
10	0		
11	0		
12	0		

SHIP SPEED BETWEEN 15.0 AND 20.0 PLOT SYMBOL TRIANGLE
BEAUFORT NO OF DATA MEAN ST. DEVIATION
NUMBER POINTS

1	8	2866.	147.
2	14	2915.	148.
3	22	3146.	217.
4	18	3246.	312.
5	19	3134.	350.
6	9	4354.	537.
7	6	6166.	833.
8	1	8506.	0.
9	1	8380.	0.
10	0		
11	0		
12	0		

SHIP SPEED BETWEEN 20.0 AND 25.0 PLOT SYMBOL PLUS
BEAUFORT NO OF DATA MEAN ST. DEVIATION
NUMBER POINTS

1	2	3020.	95.
2	8	3695.	156.
3	9	3944.	211.
4	2	3251.	273.
5	8	3673.	178.
6	8	3904.	383.
7	4	4387.	303.
8	2	3702.	84.
9	0		
10	0		
11	0		
12	0		

SHIP SPEED BETWEEN 25.0 AND 30.0 PLOT SYMBOL X
BEAUFORT NO OF DATA MEAN ST. DEVIATION
NUMBER POINTS

1	2	1713.	4.
2	8	1979.	558.
3	4	3859.	219.
4	8	1860.	261.
5	4	4430.	224.
6	17	3299.	164.
7	10	4269.	578.
8	5	3837.	261.
9	1	6288.	0.
10	0		
11	0		
12	0		

SHIP SPEED BETWEEN 30.0 AND 35.0 PLOT SYMBOL DIAMOND
BEAUFORT NO OF DATA MEAN ST. DEVIATION
NUMBER POINTS

1	0		
2	6	2551.	172.
3	1	1708.	0.
4	10	2904.	760.
5	4	2270.	78.
6	10	3787.	480.
7	18	4160.	261.
8	2	2701.	249.
9	0		
10	0		
11	0		
12	0		

HMS WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO., MCLEAN THIRD SEASON
FOR HIGHEST 1/3 VALUES

TABLE B-VIII

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	0.0 AND 31.0 MEAN	31.0 ST. DEVIATION	PLOT SYMBOL OCTAGONAL
1	4	2959.	105.	
2	4	1971.	95.	
3	2	3111.	37.	
4	4	3522.	140.	
5	4	4454.	224.	
6	12	3440.	298.	
7	14	4027.	401.	
8	2	4071.	111.	
9	2	7853.	528.	
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	31.0 AND 61.0 MEAN	61.0 ST. DEVIATION	PLOT SYMBOL TRIANGLE
1	2	1713.	4.	
2	4	3733.	153.	
3	5	3904.	218.	
4	4	3017.	303.	
5	4	3525.	362.	
6	4	3804.	229.	
7	6	3984.	510.	
8	2	2364.	30.	
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	61.0 AND 121.0 MEAN	121.0 ST. DEVIATION	PLOT SYMBOL PLUS
1	4	2906.	146.	
2	14	2503.	562.	
3	8	2705.	250.	
4	13	2912.	333.	
5	9	2872.	134.	
6	10	4000.	682.	
7	8	5221.	1460.	
8	6	6531.	2036.	
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	121.0 AND 151.0 MEAN	151.0 ST. DEVIATION	PLOT SYMBOL X
1	0			
2	3	3149.	18.	
3	11	3029.	808.	
4	8	3461.	555.	
5	8	3167.	314.	
6	12	3069.	557.	
7	8	4276.	270.	
8	0			
9	0			
10	0			
11	0			
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	151.0 AND 180.0 MEAN	180.0 ST. DEVIATION	PLOT SYMBOL DIAMOND
1	0			
2	10	3008.	481.	
3	19	3506.	313.	
4	10	3700.	428.	
5	11	3689.	187.	
6	12	3883.	319.	
7	2	3796.	18.	
8	0			
9	0			
10	0			
11	0			
12	0			

MAX WAVE-INDUCED MID VERT. BENDING STRESS VS HEADPORT NO., MCLEAN THREE SEASONS

TABLE B-IX

SHIP SPEED BETWEEN	0.0 AND 15.0	PLOT SYMBOL	OCTAGONAL		
HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	2	951.	955.	90.	
2	4	1271.	1331.	395.	
3	41	3793.	4143.	1680.	
4	39	4610.	5096.	2171.	
5	28	6638.	7090.	2489.	
6	20	5516.	5675.	1336.	
7	44	11042.	11552.	3397.	
8	0				
9	20	19873.	20116.	3122.	
10	28	19561.	19843.	3334.	
11	20	19857.	20191.	3656.	
12	12	22606.	23109.	4793.	

SHIP SPEED BETWEEN	15.0 AND 20.0	PLOT SYMBOL	TRIANGLE		
HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	24	4394.	4724.	1736.	
2	47	4408.	4774.	1833.	
3	91	4367.	4817.	2032.	
4	60	5459.	5695.	1822.	
5	62	4524.	5030.	2198.	
6	32	6642.	7407.	3279.	
7	24	11715.	12313.	3788.	
8	12	13640.	14231.	4060.	
9	20	14773.	15048.	2863.	
10	24	14938.	15268.	3154.	
11	4	14665.	14841.	2276.	
12	0				

SHIP SPEED BETWEEN	20.0 AND 25.0	PLOT SYMBOL	PLUS		
HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	8	6384.	6485.	1144.	
2	32	4349.	5184.	2821.	
3	84	5763.	6246.	2408.	
4	167	4212.	4834.	2372.	
5	179	5603.	6230.	2725.	
6	129	5582.	6080.	2359.	
7	104	7735.	8574.	3699.	
8	98	11543.	12276.	4178.	
9	24	14254.	14502.	2675.	
10	12	17374.	17507.	2150.	
11	0				
12	0				

SHIP SPEED BETWEEN	25.0 AND 30.0	PLOT SYMBOL	X		
HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	12	4037.	4200.	1880.	
2	48	2310.	2900.	1753.	
3	96	4110.	4636.	2147.	
4	198	4503.	5402.	2983.	
5	208	4611.	5537.	3066.	
6	113	5366.	5866.	2368.	
7	138	6136.	6910.	3186.	
8	92	8244.	9172.	4101.	
9	50	11892.	12487.	3808.	
10	28	9872.	10377.	3200.	
11	0				
12	4	14131.	14525.	3361.	

SHIP SPEED BETWEEN	30.0 AND 35.0	PLOT SYMBOL	DIAMOND		
HEADPORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION	
1	28	3032.	4419.	2008.	
2	252	3500.	4312.	2519.	
3	317	3647.	4599.	2802.	
4	383	3813.	4821.	2237.	
5	423	4326.	4871.	2239.	
6	420	5141.	5874.	2842.	
7	250	6170.	6898.	3067.	
8	136	8036.	8783.	3545.	
9	92	10815.	11448.	3745.	
10	44	9851.	10734.	4242.	
11	8	7128.	7168.	780.	
12	0				

MAX WAVE=INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.=MCLEAN THREE SEASONS

RELATIVE WAVE DIRECTION BETWEEN 0.0 AND 31.0 PLOT SYMBOL OCTAGONAL

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	40	4993.	5259.	1652.
2	64	3327.	3926.	2084.
3	96	5241.	6378.	1615.
4	155	4631.	5592.	3134.
5	138	4106.	4920.	2711.
6	143	5090.	5847.	2878.
7	127	8878.	9749.	4027.
8	36	9028.	9480.	2894.
9	72	10064.	10646.	4361.
10	36	16514.	17401.	5086.
11	4	19497.	19567.	1654.
12	12	27172.	27458.	3954.

TABLE B-X

RELATIVE WAVE DIRECTION BETWEEN 31.0 AND 61.0 PLOT SYMBOL TRIANGLE

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	8	3009.	3045.	462.
2	59	5119.	6039.	3171.
3	136	3328.	4102.	2398.
4	192	2959.	3440.	1755.
5	151	4258.	4980.	2583.
6	108	5673.	6403.	2969.
7	84	5566.	6604.	3558.
8	68	9128.	10204.	4561.
9	48	10582.	11080.	3285.
10	32	12973.	14099.	5522.
11	16	11962.	12944.	4947.
12	8	16877.	17938.	6078.

RELATIVE WAVE DIRECTION BETWEEN 61.0 AND 121.0 PLOT SYMBOL PLUS

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	18	4066.	4703.	2362.
2	116	3443.	4197.	2401.
3	174	3846.	4833.	2206.
4	302	3787.	4435.	2309.
5	319	4427.	5021.	2369.
6	210	4810.	5484.	2635.
7	167	7127.	7925.	3465.
8	95	7590.	8743.	4341.
9	52	11224.	11594.	2008.
10	32	9804.	10427.	3551.
11	4	14665.	14841.	2276.
12	0			

RELATIVE WAVE DIRECTION BETWEEN 121.0 AND 151.0 PLOT SYMBOL X

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	0			
2	35	2917.	3471.	1881.
3	110	3426.	3920.	1903.
4	156	4623.	5274.	2540.
5	163	5141.	5826.	2741.
6	184	5759.	6392.	2773.
7	93	7308.	8032.	3334.
8	115	10783.	11498.	3093.
9	28	10900.	11759.	4412.
10	24	11821.	12319.	3470.
11	8	23102.	23327.	3236.
12	8	24098.	24182.	2009.

RELATIVE WAVE DIRECTION BETWEEN 151.0 AND 180.0 PLOT SYMBOL DIAMOND

BEAUFORT NUMBER	NO. OF DATA POINTS	MEAN	RMS	ST. DEVIATION
1	0			
2	100	2947.	3590.	2051.
3	114	5180.	5589.	2101.
4	106	4898.	4589.	2240.
5	145	5730.	6311.	2626.
6	112	8029.	9406.	2221.
7	96	5781.	6404.	2759.
8	28	9824.	10508.	3714.
9	14	11882.	12154.	2444.
10	14	18111.	18226.	2044.
11	0			
12	0			

MAX WAVE-INDUCED MID VENT, BENDING STRESS VS BEAUFORT NO., MCLEAN THREE SEASONS
FOR HIGHEST 1/3 VALUES

TABLE B-XI

SHIP SPEED BETWEEN BEAUFORT NUMBER	0.0 AND 15.0 NO OF DATA POINTS	MEAN	ST. DEVIATION
1	0		
2	1	1643.	0.
3	13	5704.	1456.
4	13	7281.	1430.
5	9	9495.	1649.
6	6	7083.	1344.
7	14	14976.	3389.
8	0		
9	6	23597.	1830.
10	9	22902.	3497.
11	6	24573.	2424.
12	4	26886.	1306.

SHIP SPEED BETWEEN BEAUFORT NUMBER	15.0 AND 20.0 NO OF DATA POINTS	MEAN	ST. DEVIATION
1	8	6043.	265.
2	15	6305.	496.
3	30	6431.	617.
4	20	7200.	928.
5	20	6762.	677.
6	10	10111.	1591.
7	8	16250.	1810.
8	4	19020.	1002.
9	6	18109.	431.
10	8	18350.	2242.
11	1	17871.	0.
12	0		

SHIP SPEED BETWEEN BEAUFORT NUMBER	20.0 AND 25.0 NO OF DATA POINTS	MEAN	ST. DEVIATION
1	2	7887.	491.
2	10	8033.	831.
3	28	8349.	1115.
4	55	6872.	2196.
5	50	9580.	2303.
6	43	8172.	1180.
7	30	12197.	2181.
8	32	16102.	1580.
9	8	17470.	1499.
10	4	19469.	306.
11	0		
12	0		

SHIP SPEED BETWEEN BEAUFORT NUMBER	25.0 AND 30.0 NO OF DATA POINTS	MEAN	ST. DEVIATION
1	4	5423.	212.
2	16	6028.	1151.
3	32	6300.	1530.
4	66	8053.	2173.
5	68	8307.	1737.
6	37	8051.	1678.
7	40	9601.	2772.
8	30	13196.	2766.
9	19	16450.	1776.
10	9	13707.	1909.
11	0		
12	1	19880.	0.

SHIP SPEED BETWEEN BEAUFORT NUMBER	30.0 AND 35.0 NO OF DATA POINTS	MEAN	ST. DEVIATION
1	0		
2	80	6363.	1219.
3	105	6302.	2185.
4	127	8372.	3338.
5	101	8382.	1908.
6	140	6920.	1603.
7	86	8177.	2219.
8	45	9729.	1963.
9	30	12173.	2007.
10	18	14900.	1282.
11	2	15182.	1988.
12	0	8124.	109.

MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.-MCLEAN THREE SEASONS
FOR HIGHEST 1/3 VALUES

TABLE B-XII

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	0.0 AND 31.0 MEAN	31.0 ST. DEVIATION	PLOT SYMBOL OCTAGONAL
1	13	6630.	790.	
2	21	5728.	1319.	
3	32	8723.	4253.	
4	51	8491.	2156.	
5	46	7258.	2035.	
6	47	8278.	1951.	
7	42	13444.	2847.	
8	12	12234.	1383.	
9	24	20324.	2213.	
10	12	21724.	3549.	
11	1	21680.	0.	
12	4	31984.	2852.	

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	31.0 AND 61.0 MEAN	61.0 ST. DEVIATION	PLOT SYMBOL TRIANGLE
1	2	3675.	249.	
2	19	8592.	1991.	
3	45	6131.	2106.	
4	64	5036.	1346.	
5	50	7174.	2315.	
6	34	8893.	2657.	
7	28	9859.	2591.	
8	22	14644.	2293.	
9	16	14146.	1630.	
10	10	18973.	1924.	
11	5	17599.	919.	
12	2	26173.	2547.	

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	61.0 AND 121.0 MEAN	121.0 ST. DEVIATION	PLOT SYMBOL PLUS
1	4	6908.	802.	
2	38	6701.	2019.	
3	58	6357.	1714.	
4	100	6412.	1935.	
5	106	7173.	1396.	
6	70	7998.	1593.	
7	55	11184.	2177.	
8	31	12451.	4083.	
9	17	14318.	1165.	
10	10	14008.	2792.	
11	1	17871.	0.	
12	0			

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	121.0 AND 151.0 MEAN	151.0 ST. DEVIATION	PLOT SYMBOL X
1	0			
2	11	5348.	1432.	
3	36	5371.	2022.	
4	52	7725.	1549.	
5	54	8294.	1873.	
6	54	8935.	2048.	
7	31	10938.	2627.	
8	18	14977.	1612.	
9	9	15180.	1057.	
10	8	15271.	1250.	
11	2	27148.	206.	
12	2	28850.	425.	

RELATIVE WAVE DIRECTION BETWEEN BEAUFORT NUMBER	NO OF DATA POINTS	151.0 AND 180.0 MEAN	180.0 ST. DEVIATION	PLOT SYMBOL DIAMOND
1	0			
2	33	5297.	1685.	
3	38	7492.	1175.	
4	35	7501.	1768.	
5	48	8448.	1982.	
6	37	7399.	1044.	
7	32	8727.	2470.	
8	8	14193.	2910.	
9	4	14629.	1046.	
10	4	20468.	1104.	
11	0			
12	0			

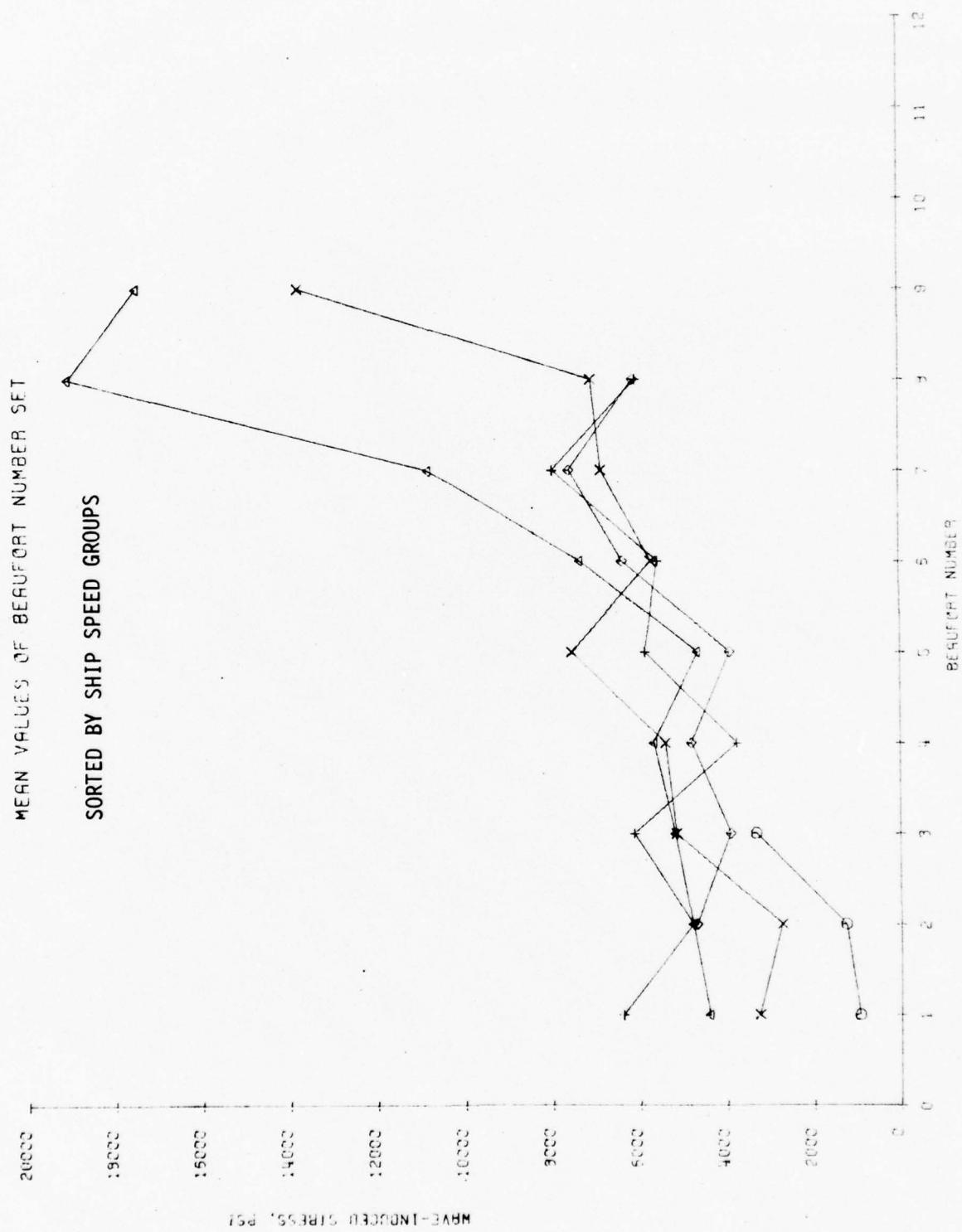


Figure B-1. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.-MCLEAN THIRD SEASON

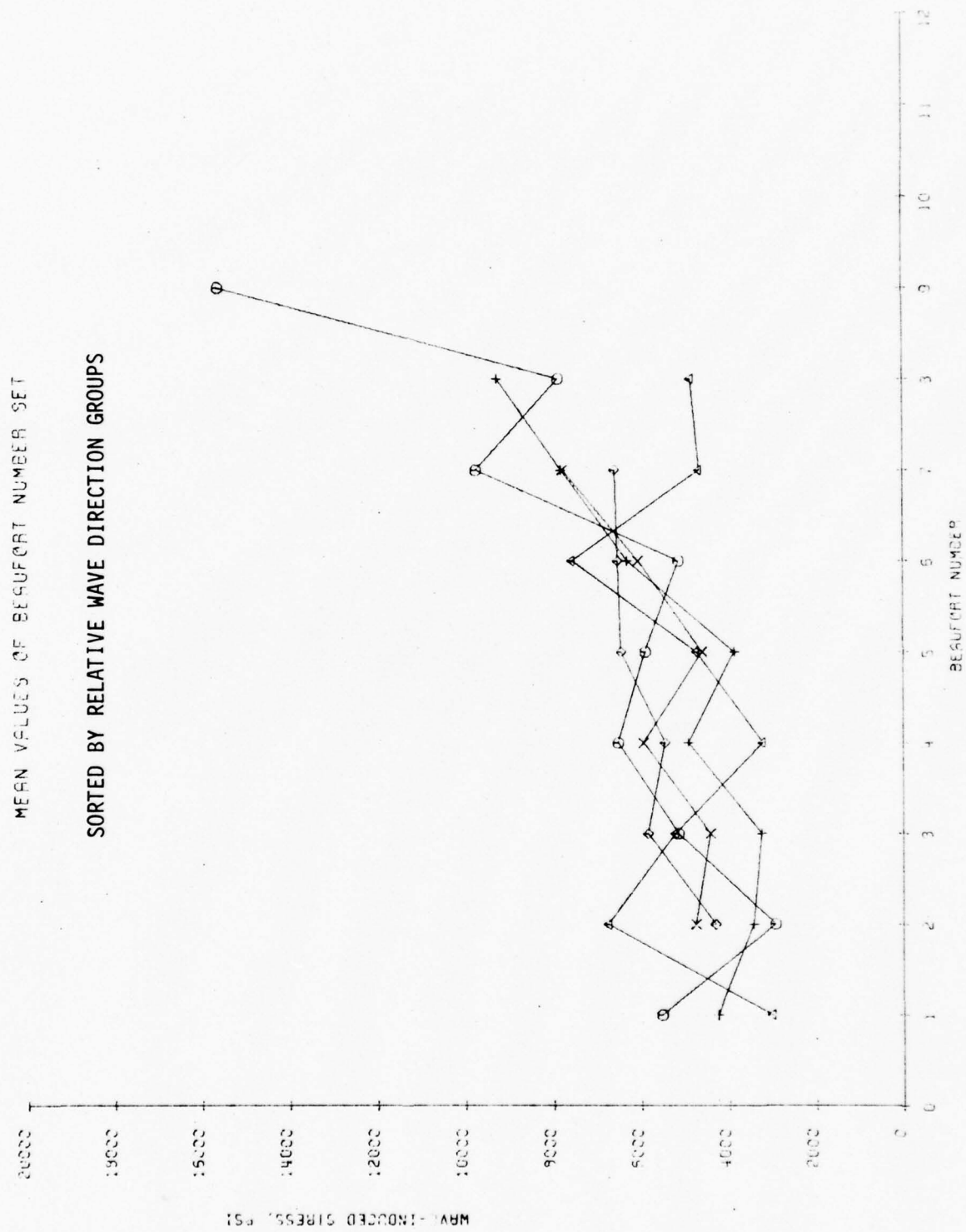


Figure B-2. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. - MCLEAN THIRD SEASON

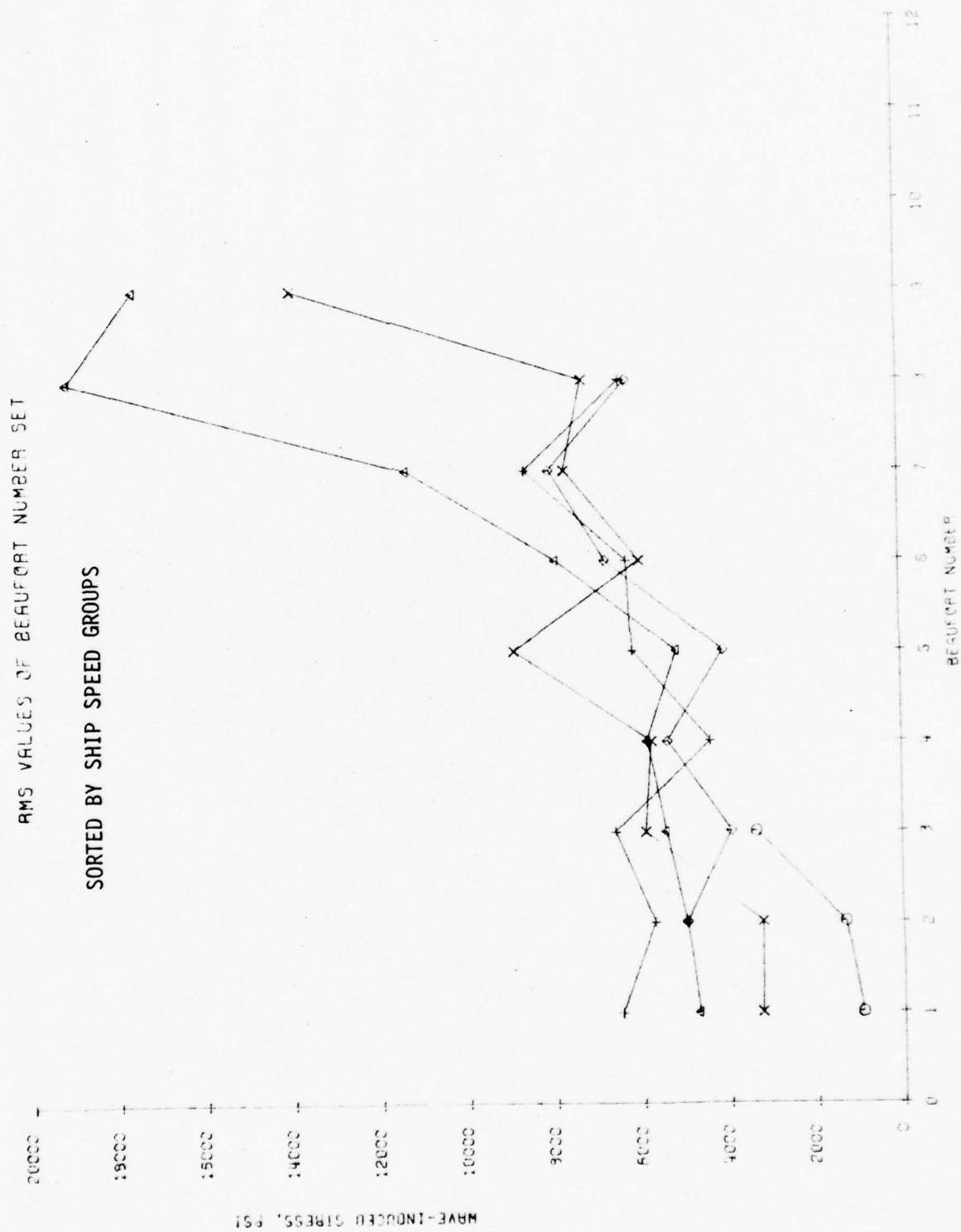


Figure B-3. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. - MOLEEN THIRD SEASON

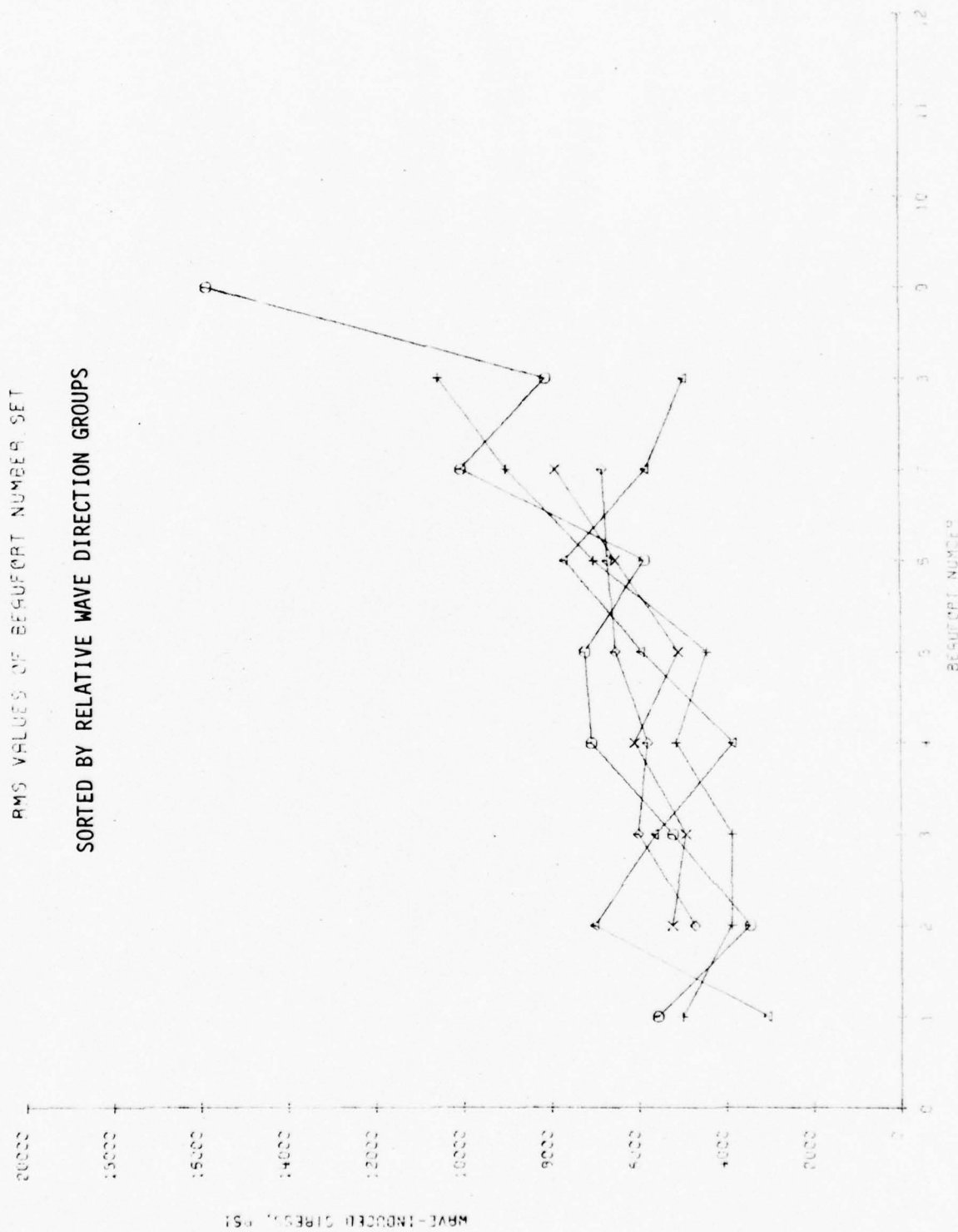


Figure B-4. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.-MEAN THIRD SEASON

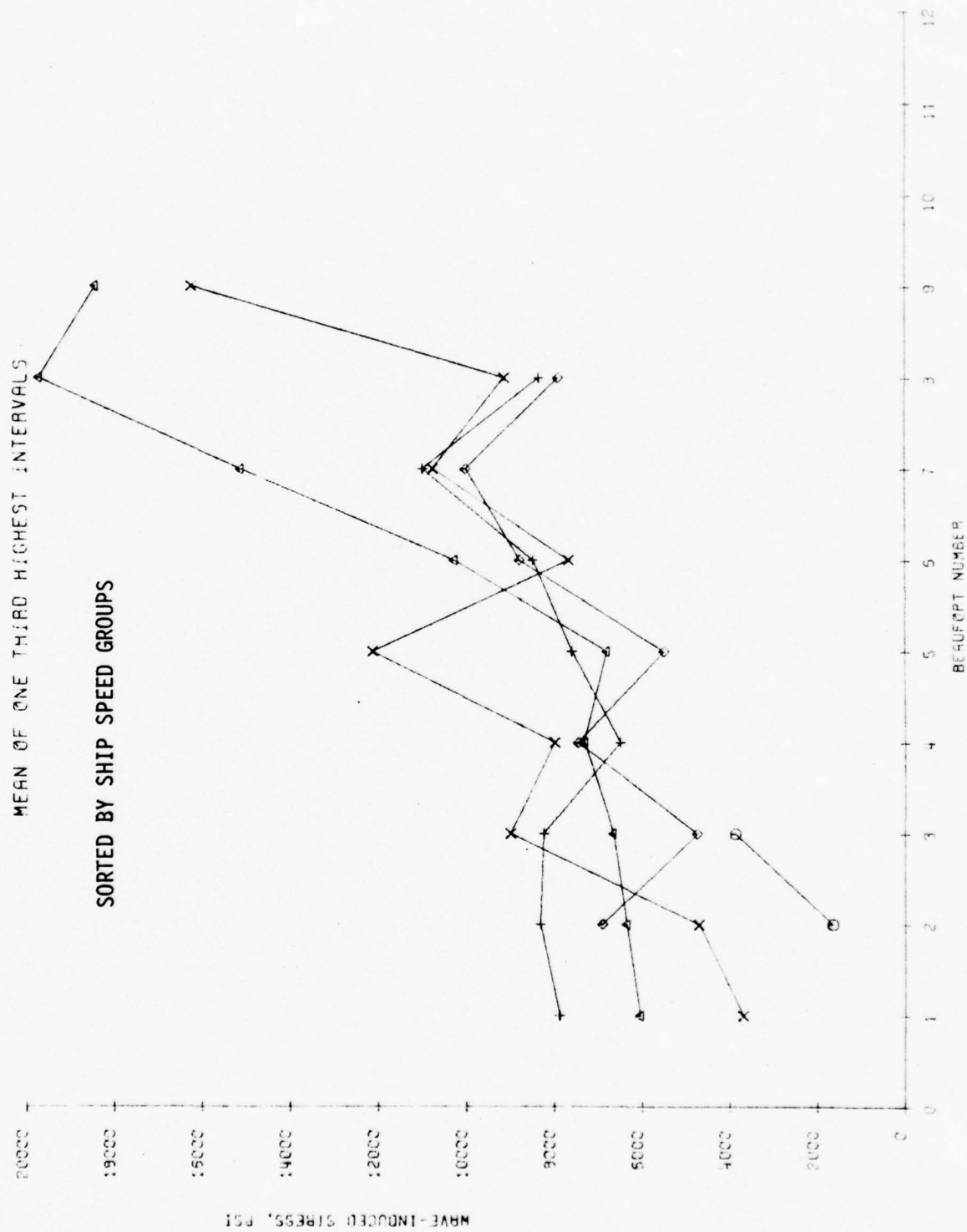


Figure B-5 MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. -MCLEAN THIRD SEASON

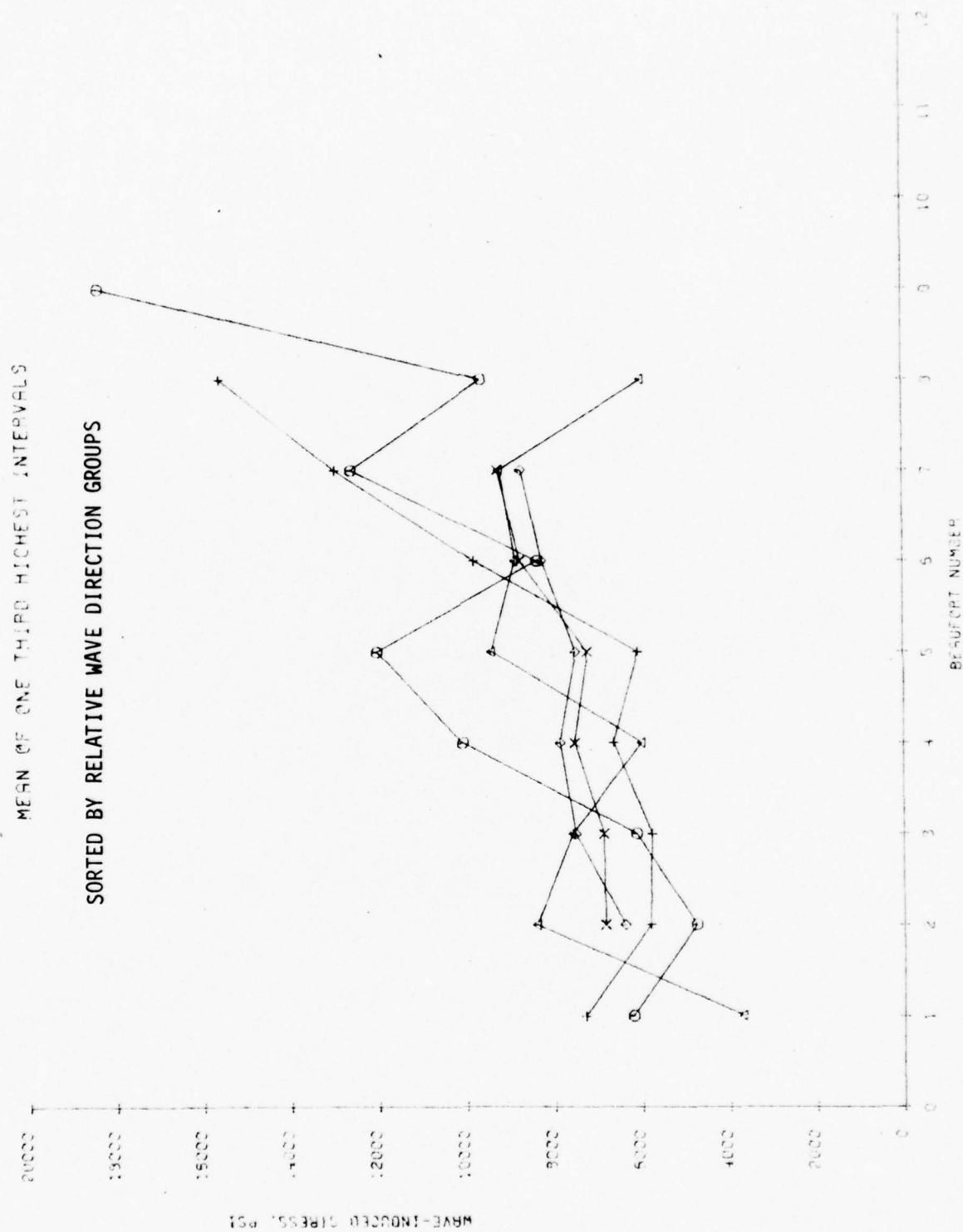


Figure B-6. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. - MCLEARN THIRD SEASON

SORTED BY SHIP SPEED GROUPS

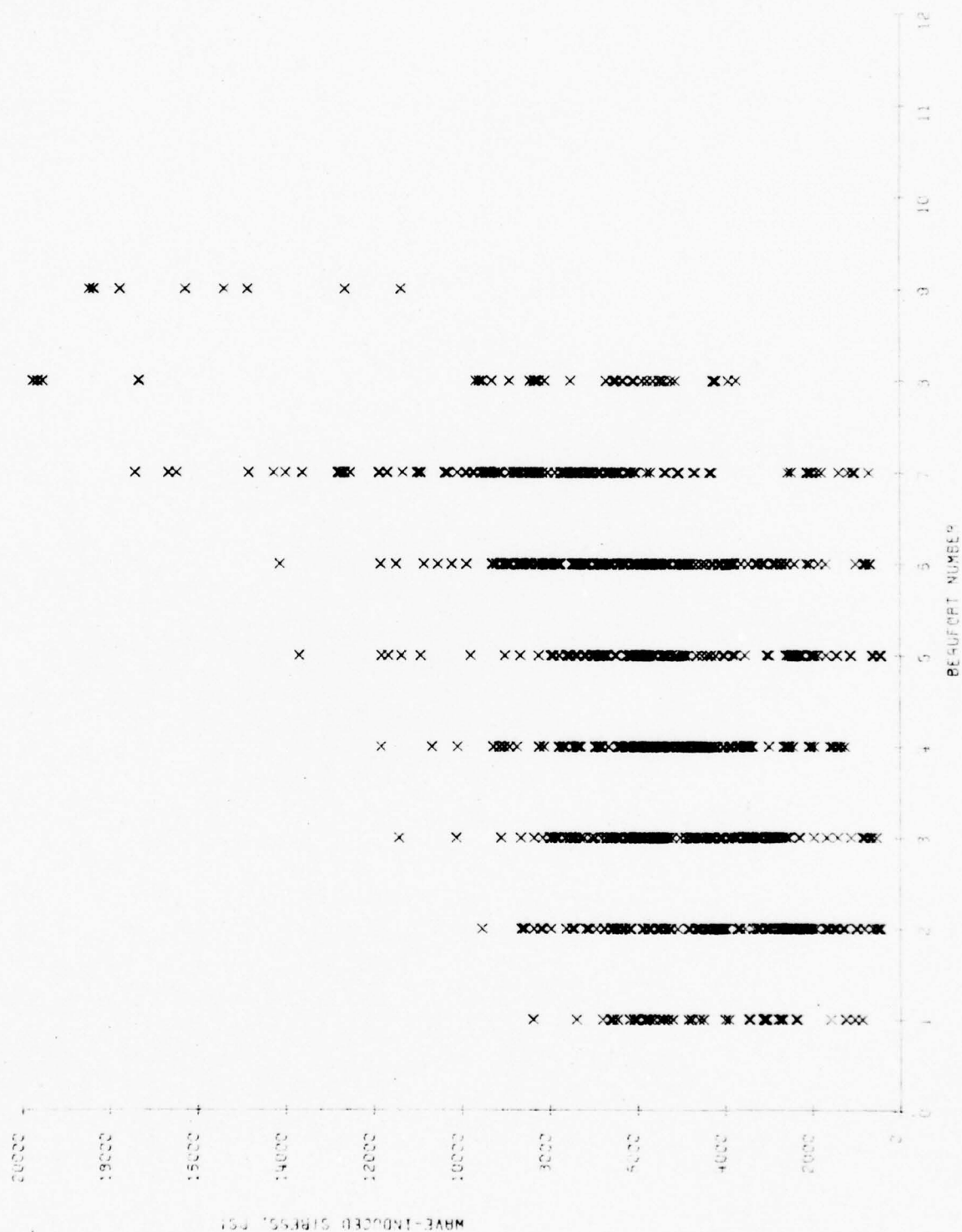


Figure B-7. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. - MCLEARN THIRD SEASON

SORTED BY RELATIVE WAVE DIRECTION GROUPS

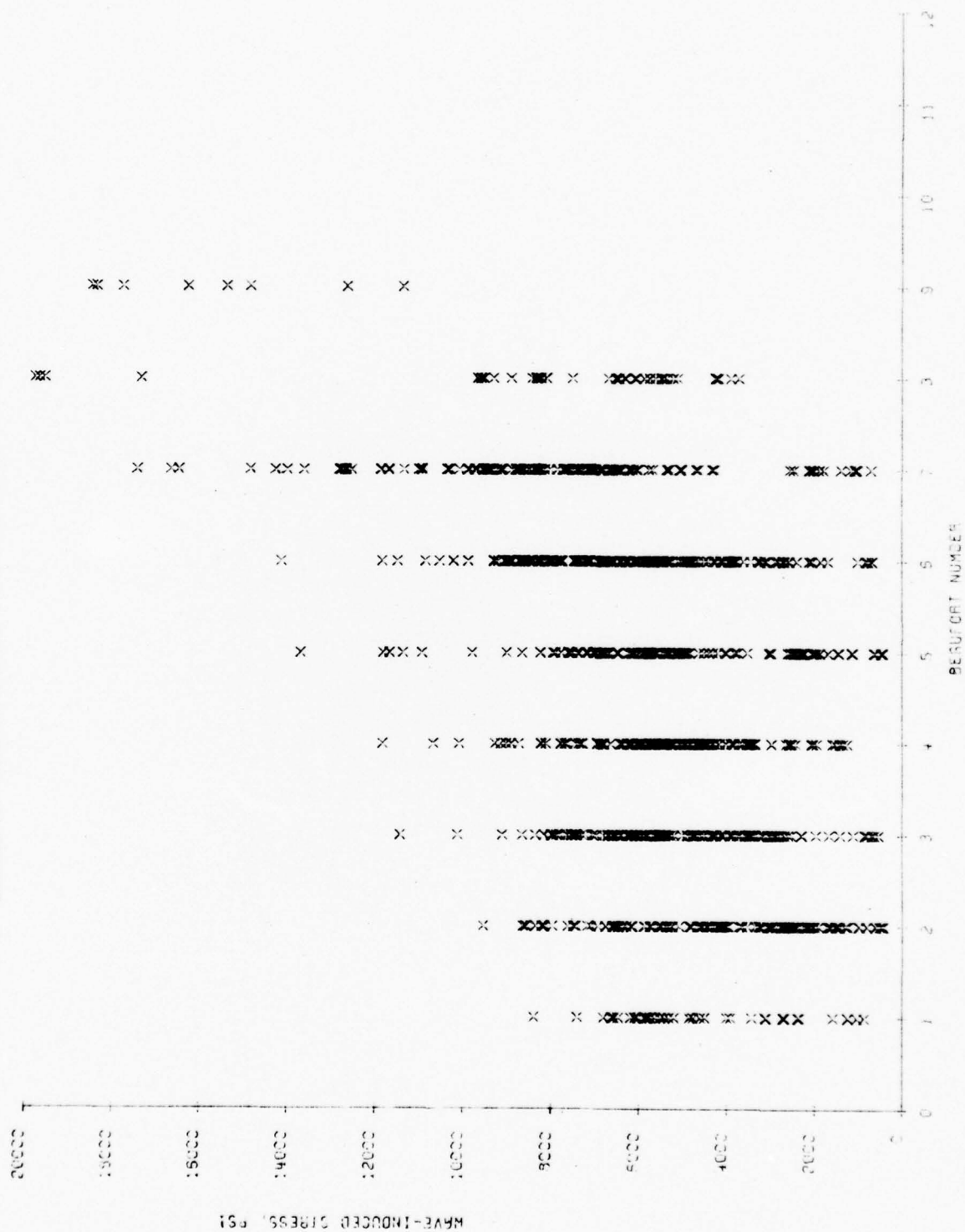


Figure B-8. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BERUPORT NO. -MCLEAN THIRD SEASON

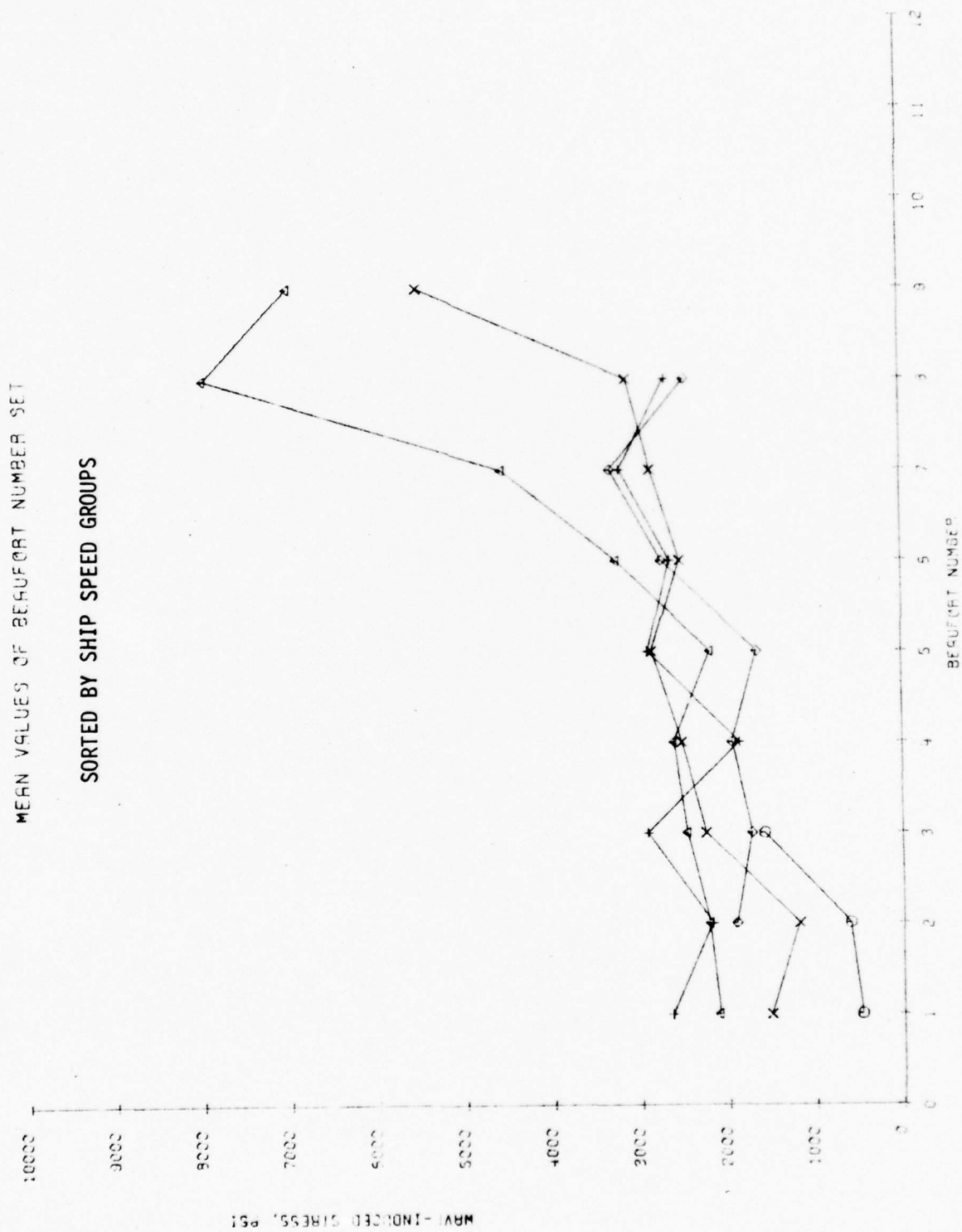


Figure B-9. AVG WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.-MCLEARN THIRD SEASON

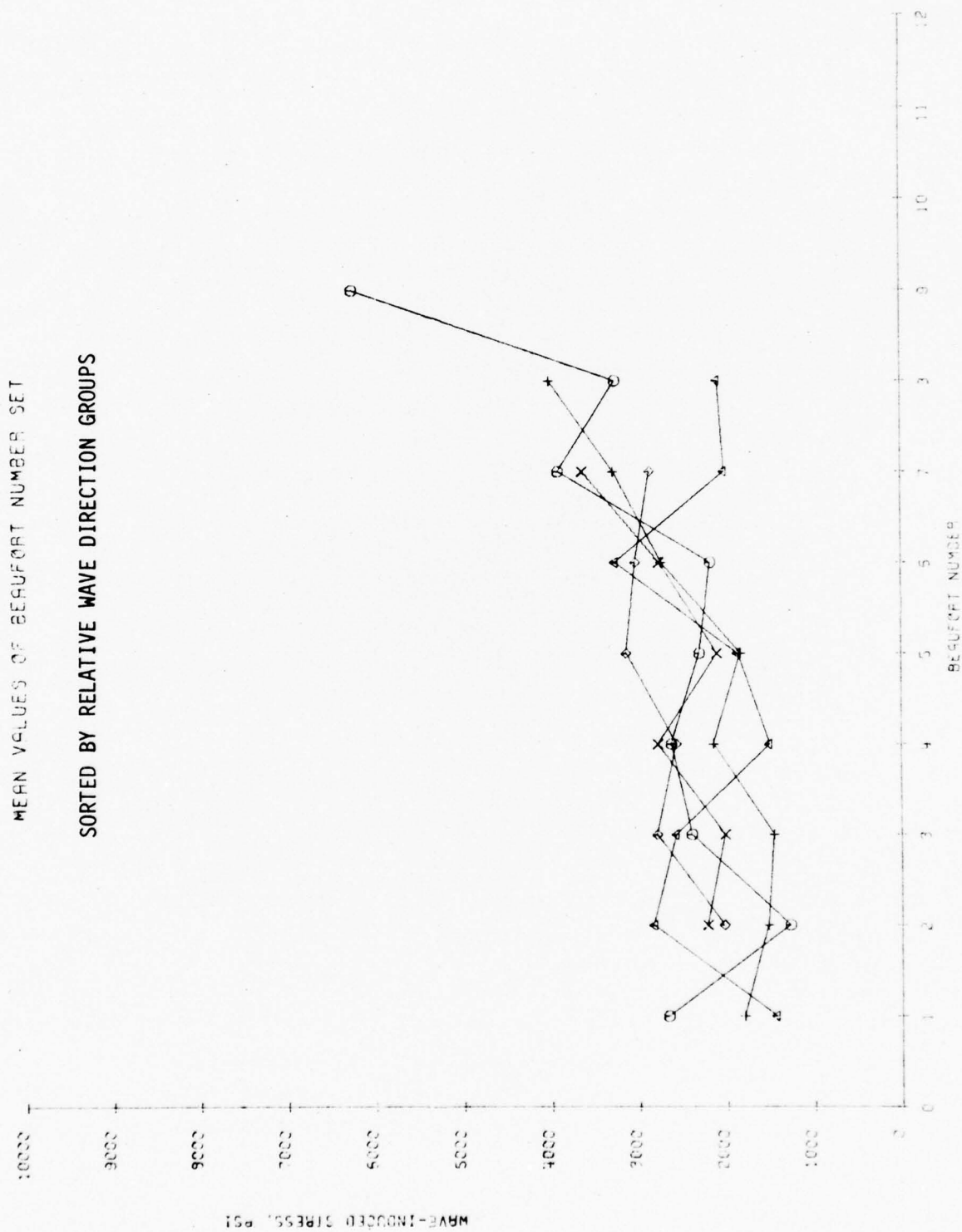


Figure B-10. RMS WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. - MCLEAN THIRD SEASON.

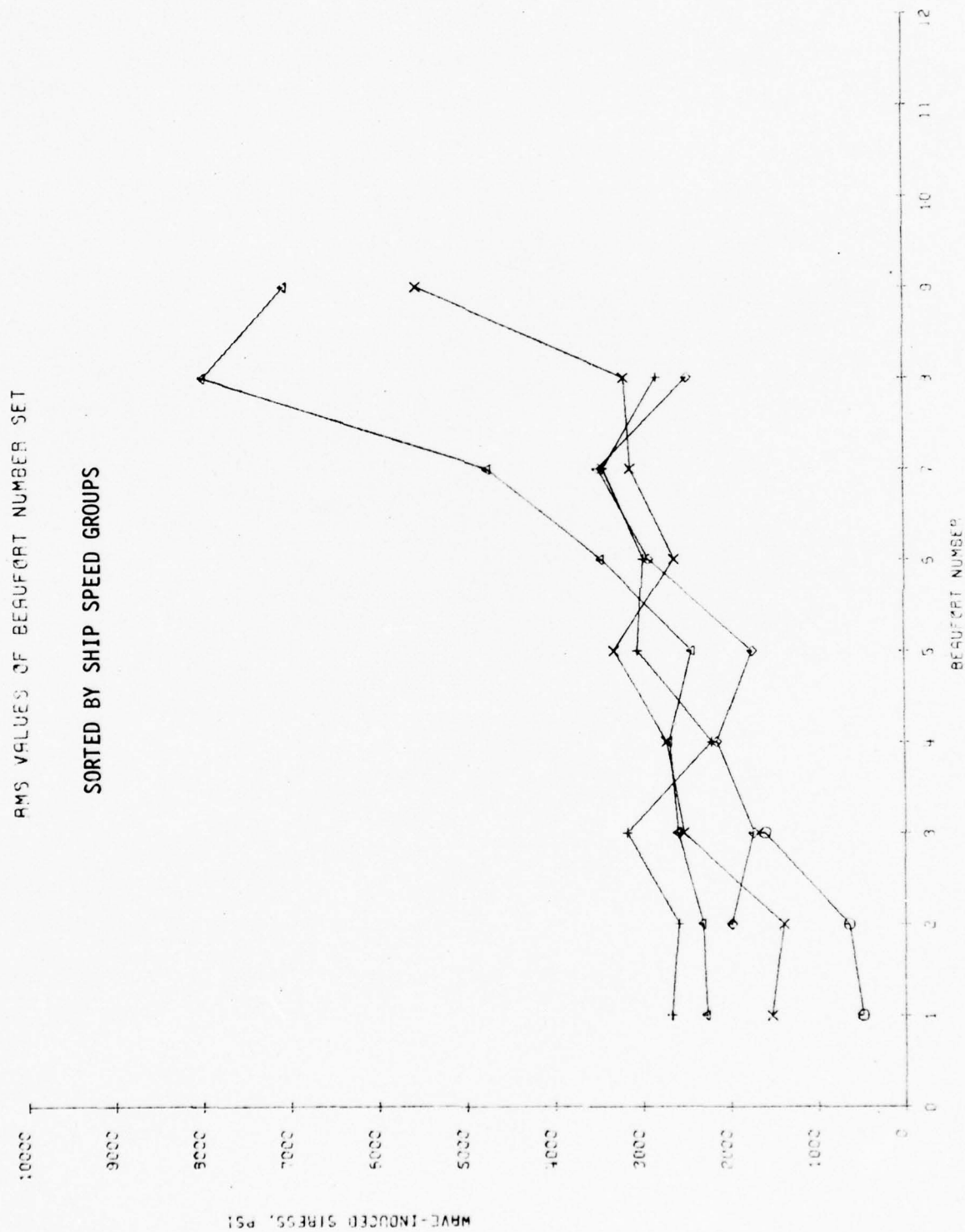


Figure B-11. AMS WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. - MOLEARN THIRD SEASON

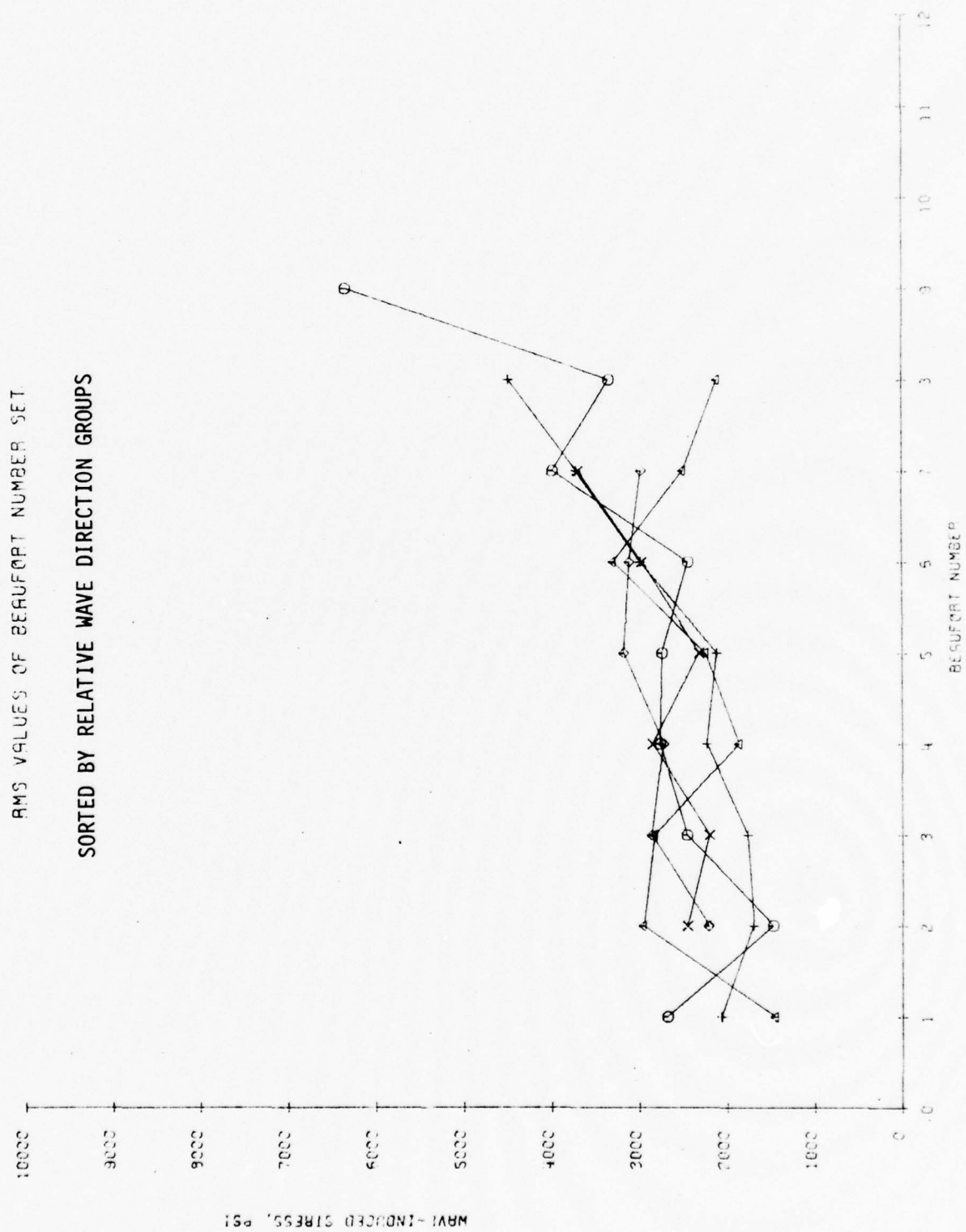


Figure B-12. RMS WAVE-INDUCED MID VERT. BENDING STRESS VS BEaufORT NO., MCLEAN THIRD SEASON.

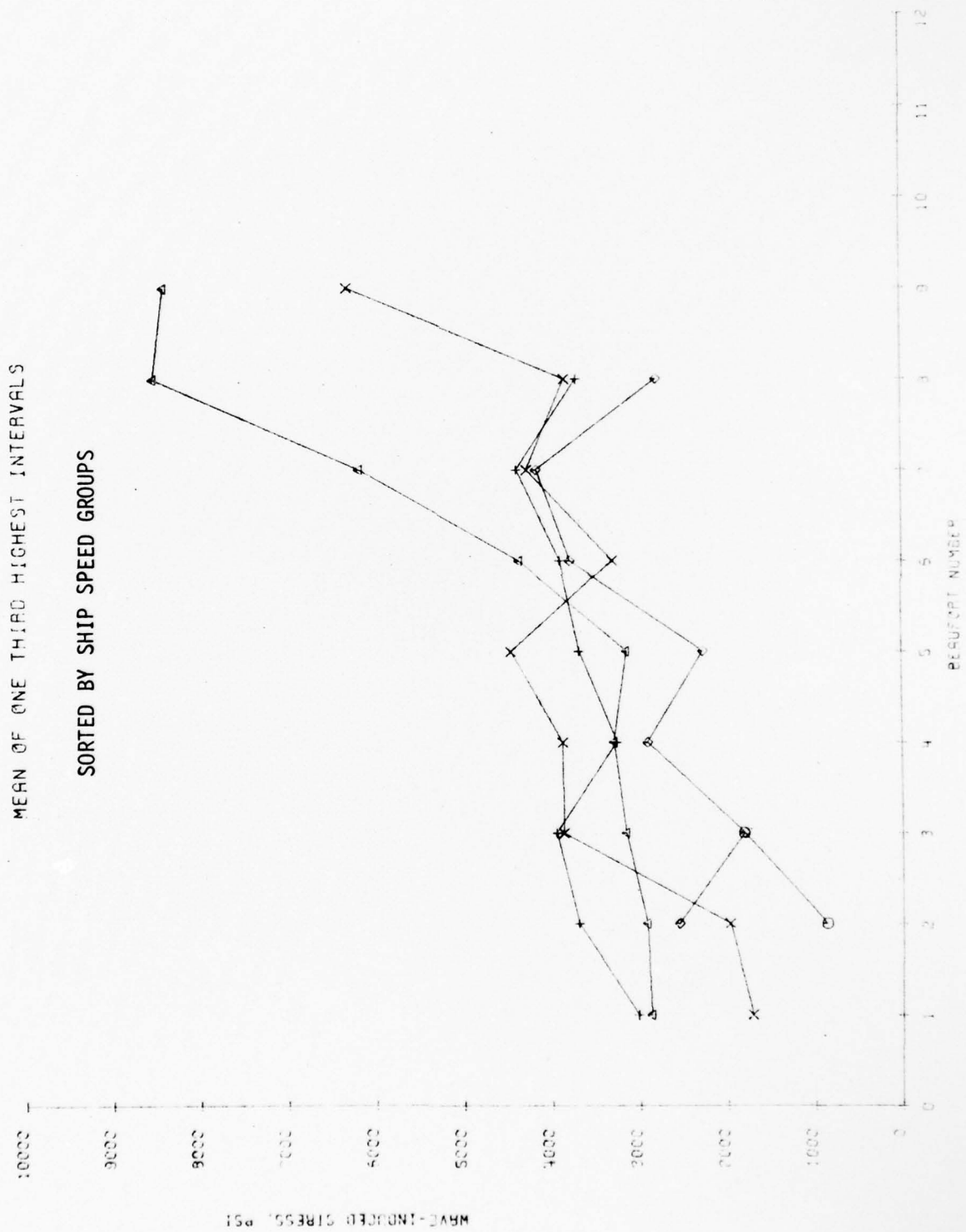


Figure B-13. RMS WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. MEAN THIRD SEASON

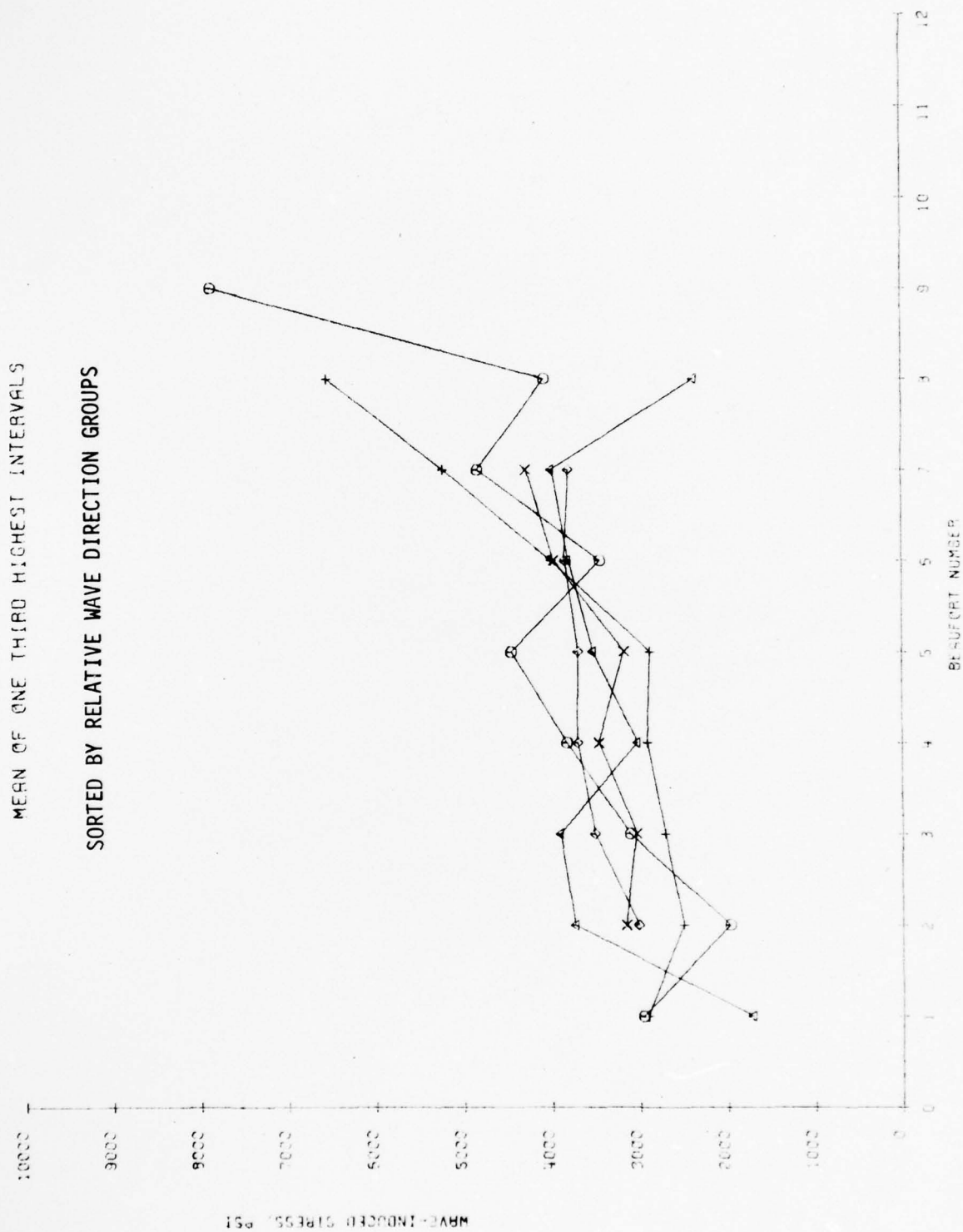


Figure B-14. RMS WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO., -MCLEAN THIRD SEASON

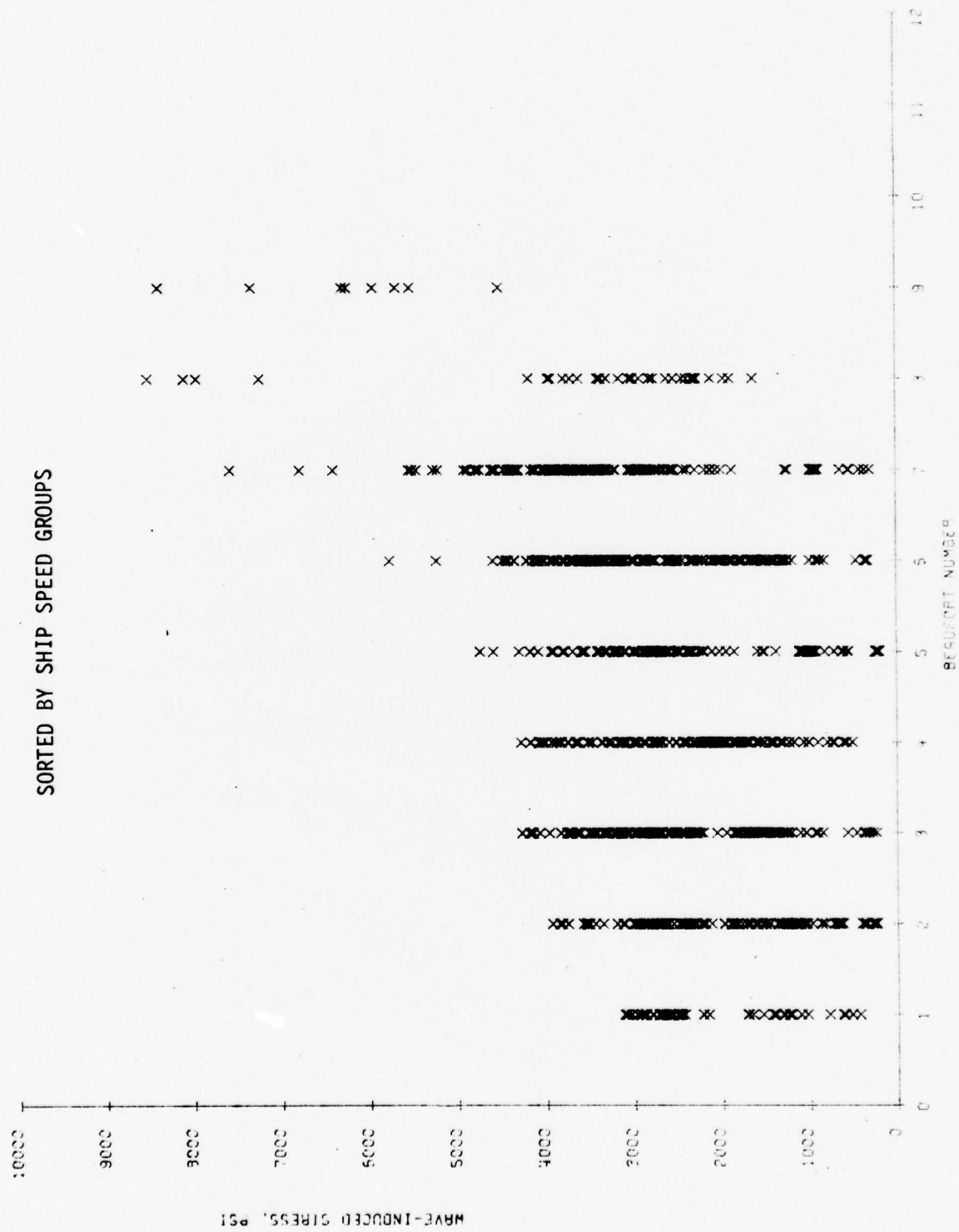


Figure B-15. RMS WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO., MCLEAN THIRD SEASON.

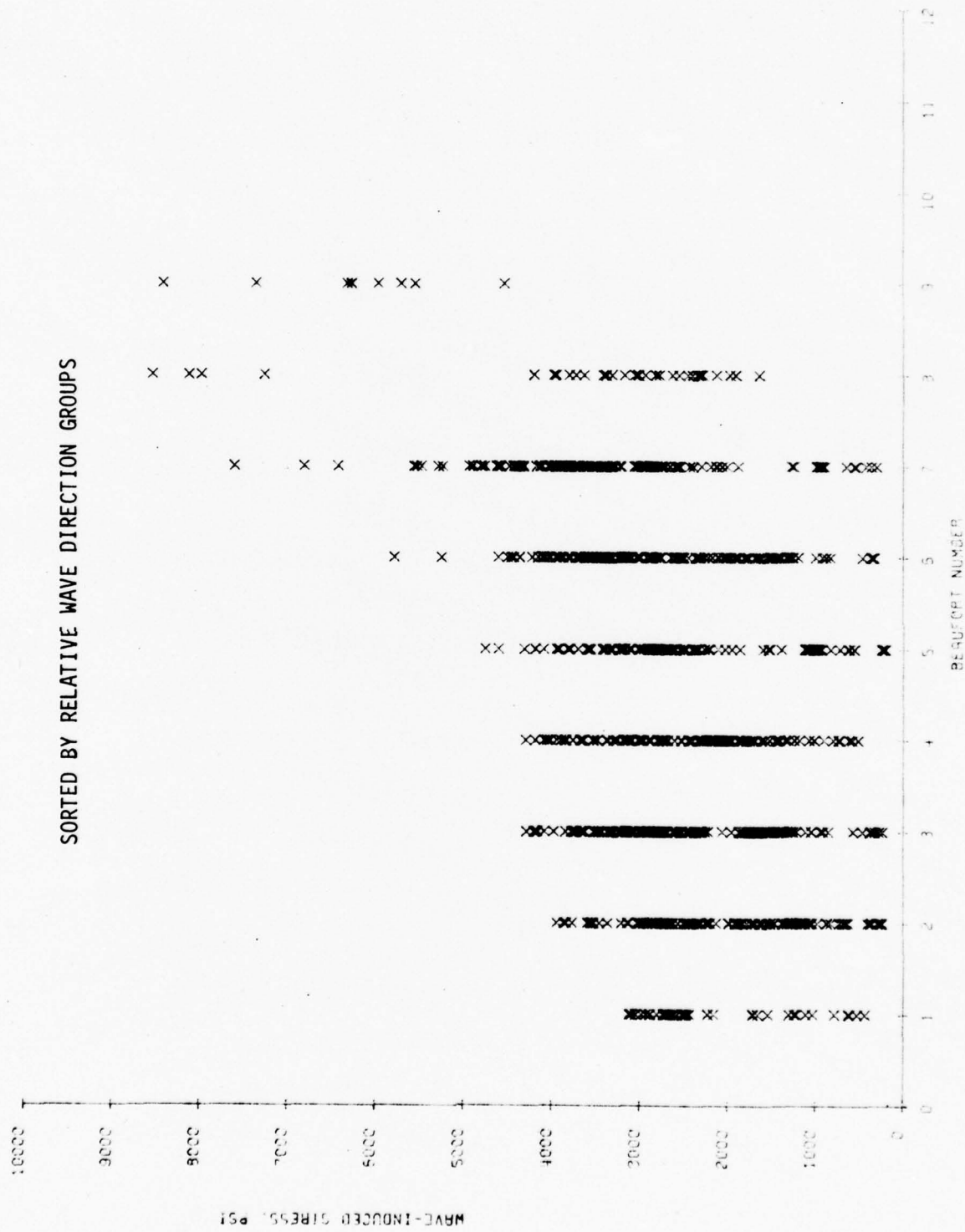


Figure B-16. RMS WAVE-INDUCED MID VERT. BENDING STRESS VS. REPORT NO., NOLEEN THIRD SEASON

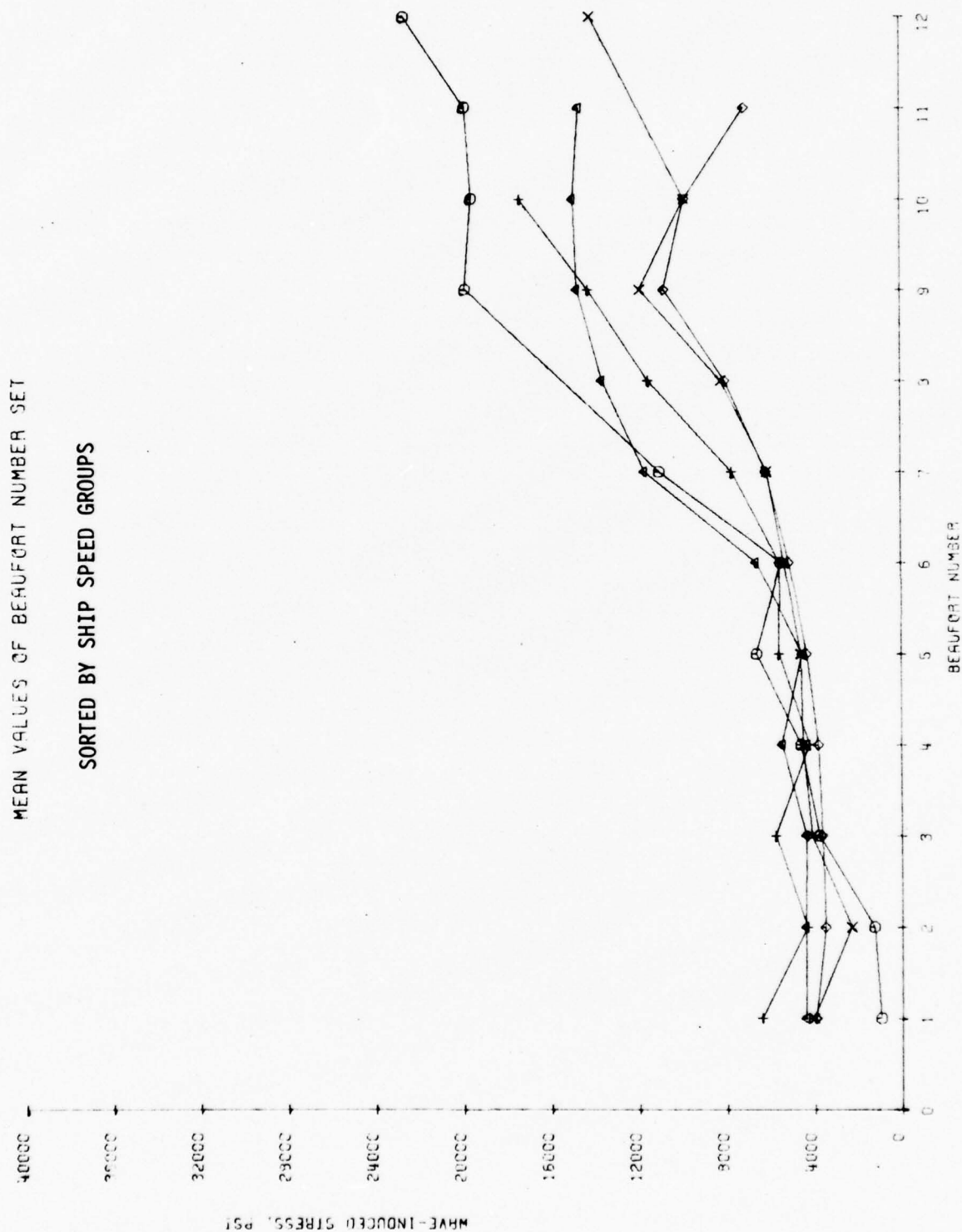


Figure B-17. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.-MCLEAN THREE SEASONS

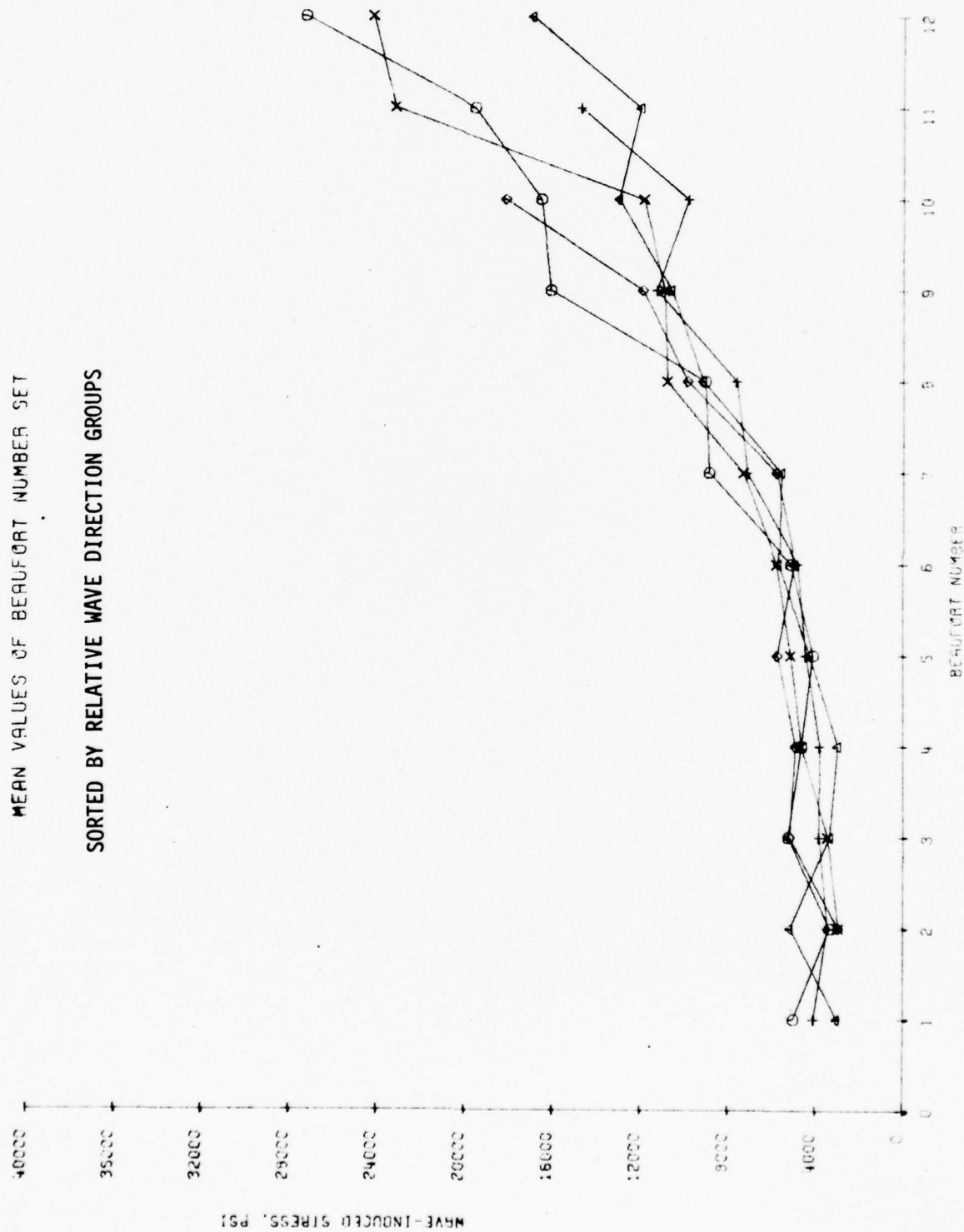


Figure B-18. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.-MCLEAN THREE SEASONS

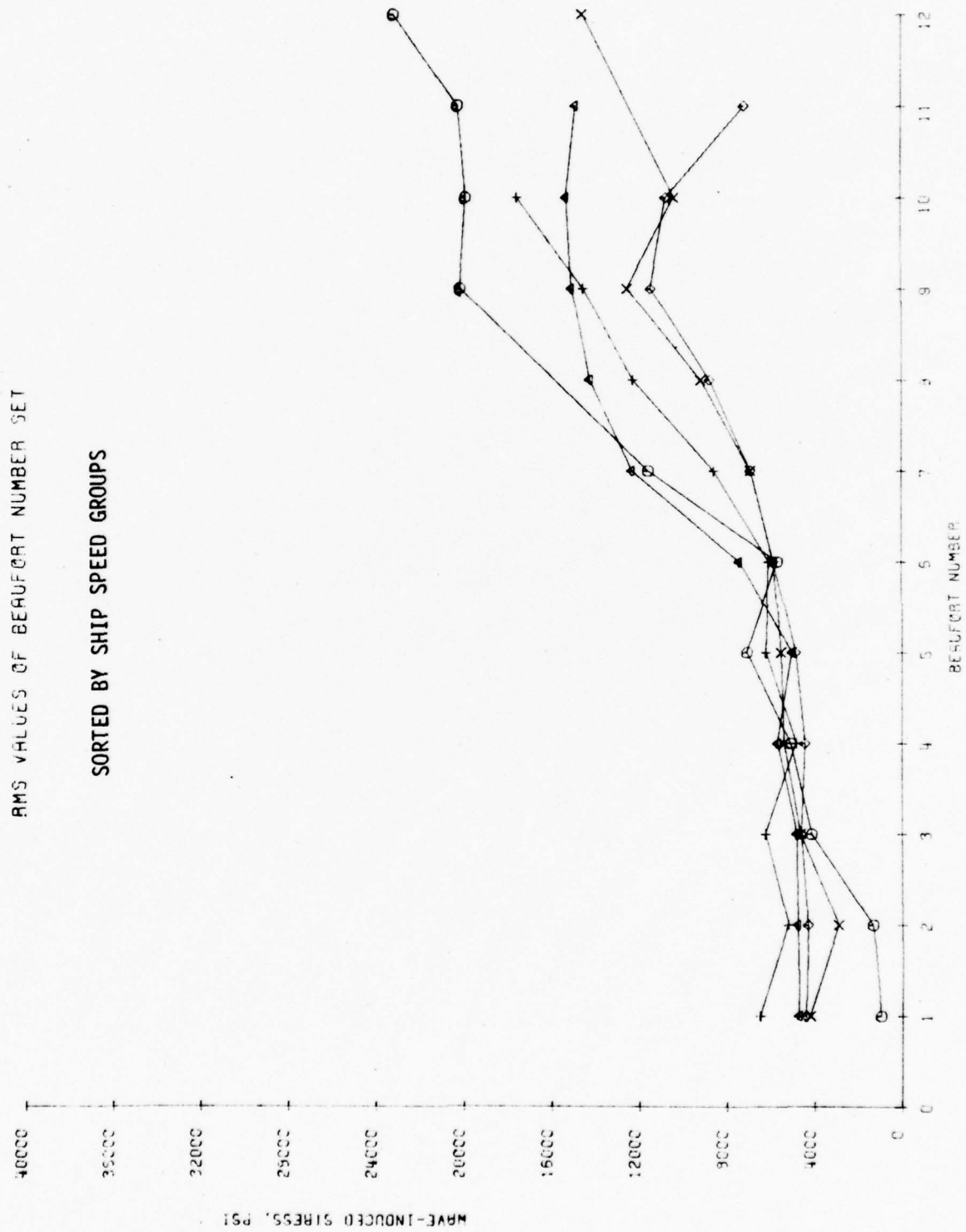


Figure B-19. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.-MCLEAN THREE SEASONS

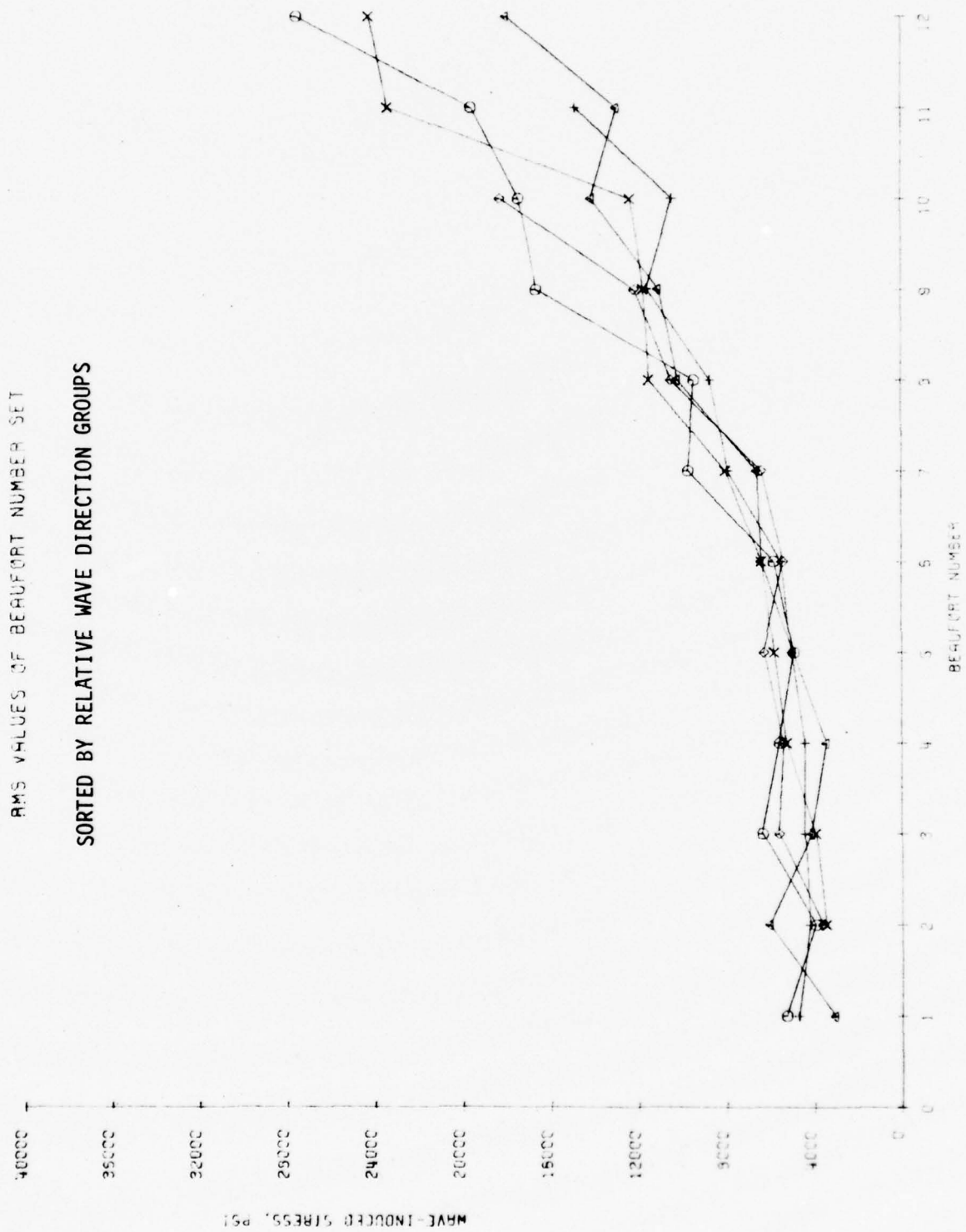


Figure B-20. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. -MCLEAN THREE SEASONS

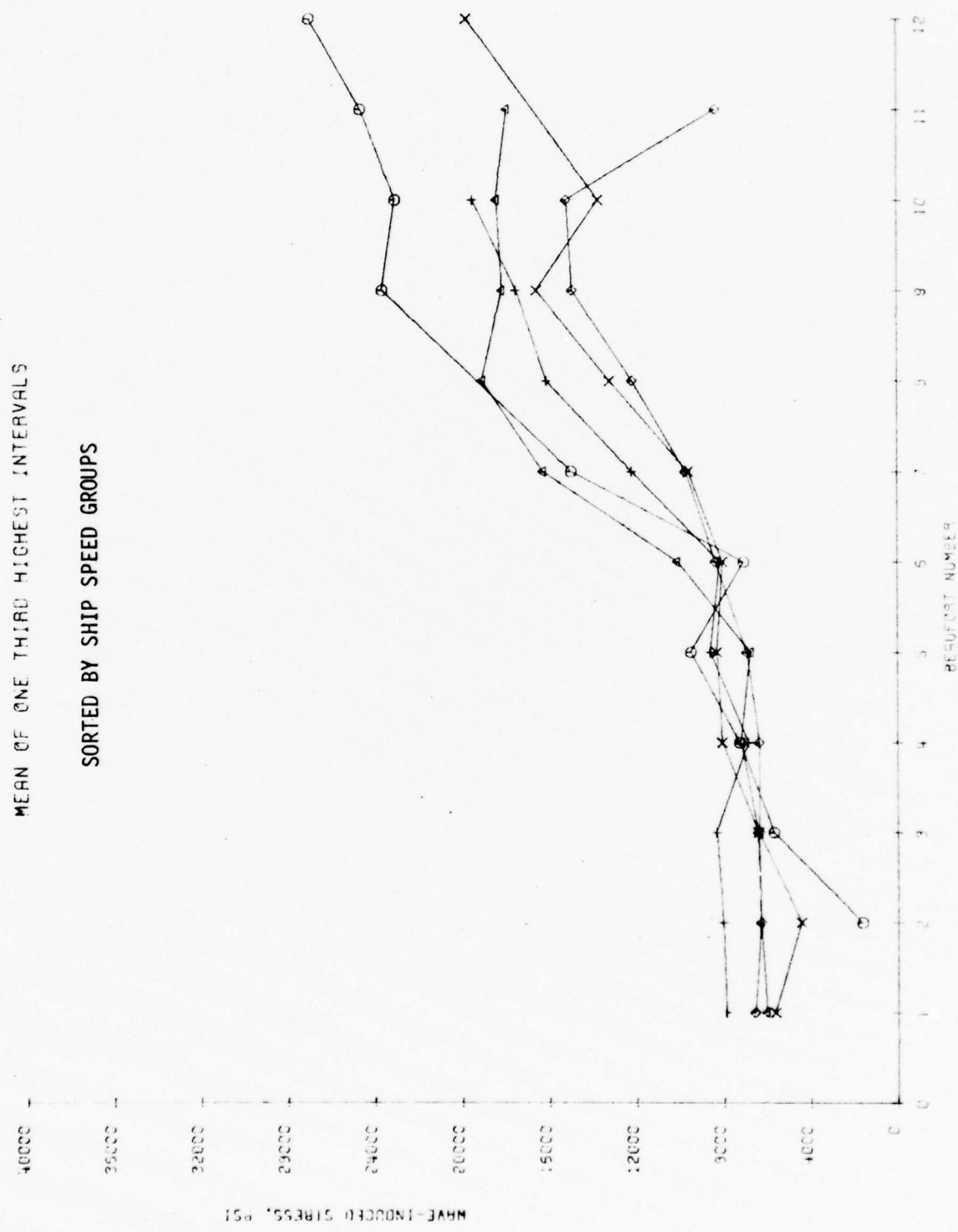


Figure B-21. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO. -MCLEAN THREE SEASONS

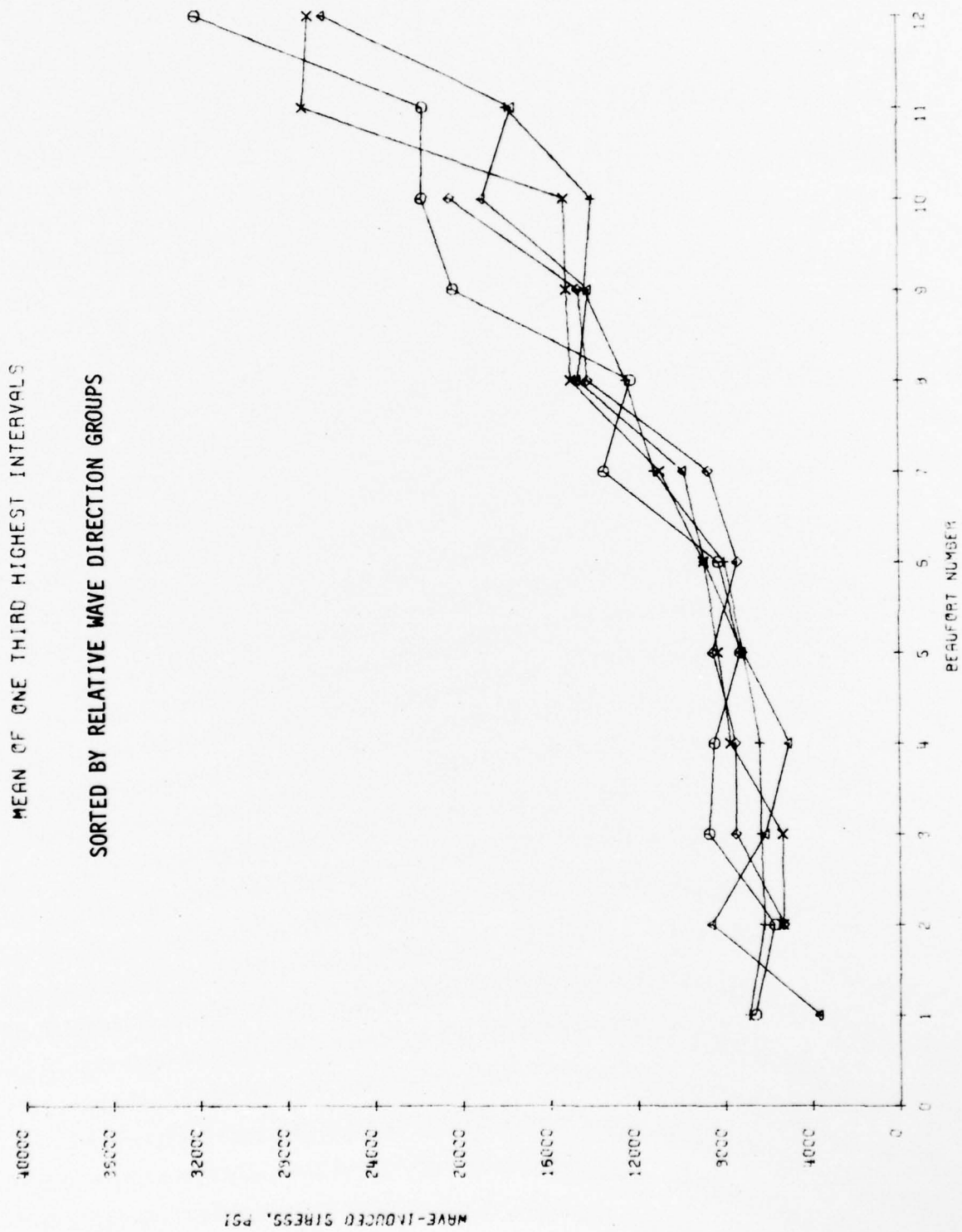


Figure B-22. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.--MCLEAN THREE SEASONS

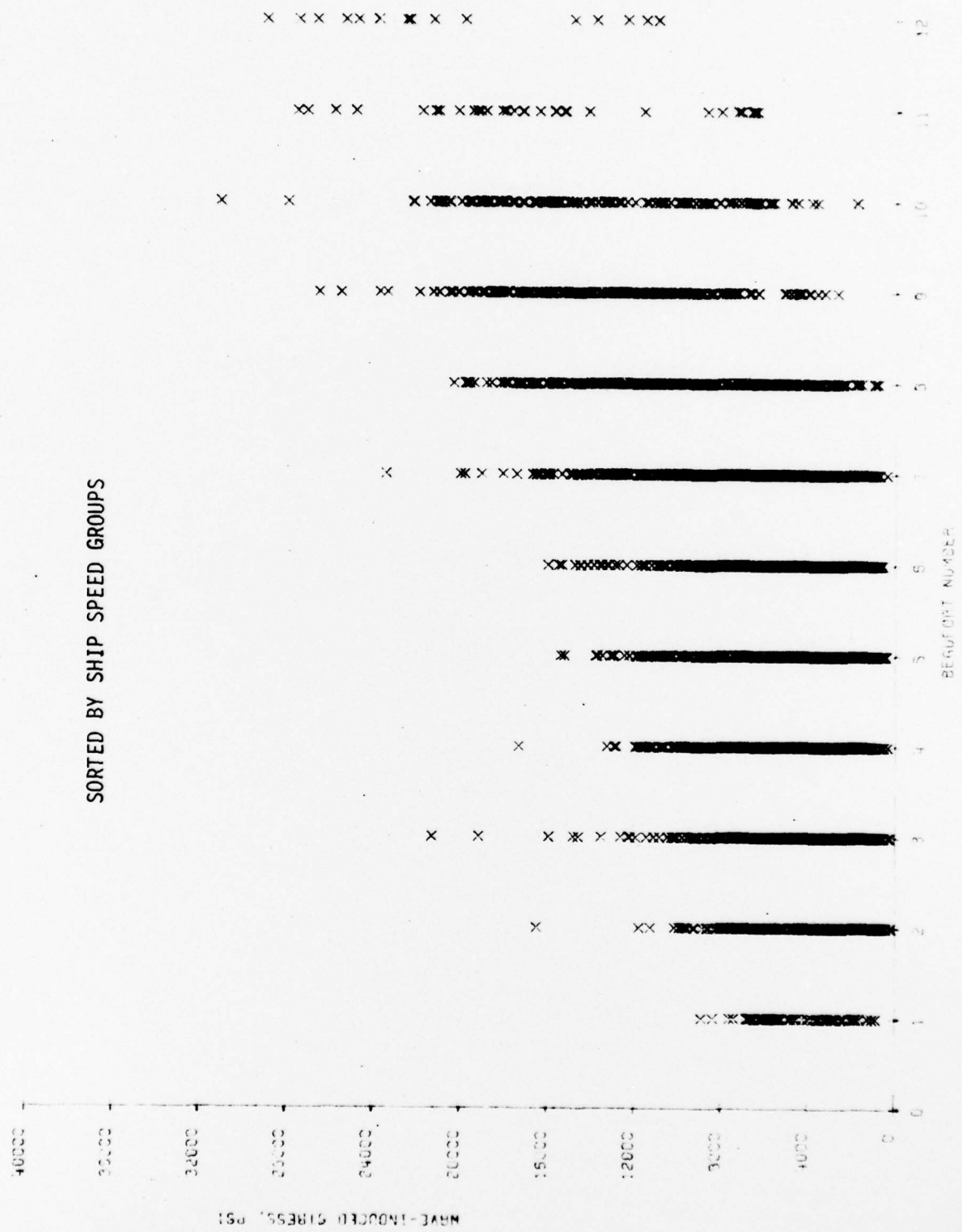


Figure B-23. MAX WAVE-INDUCED MID VERT. BENDING STRESS VS BEAUFORT NO.-MCLEAN THREE SEASONS

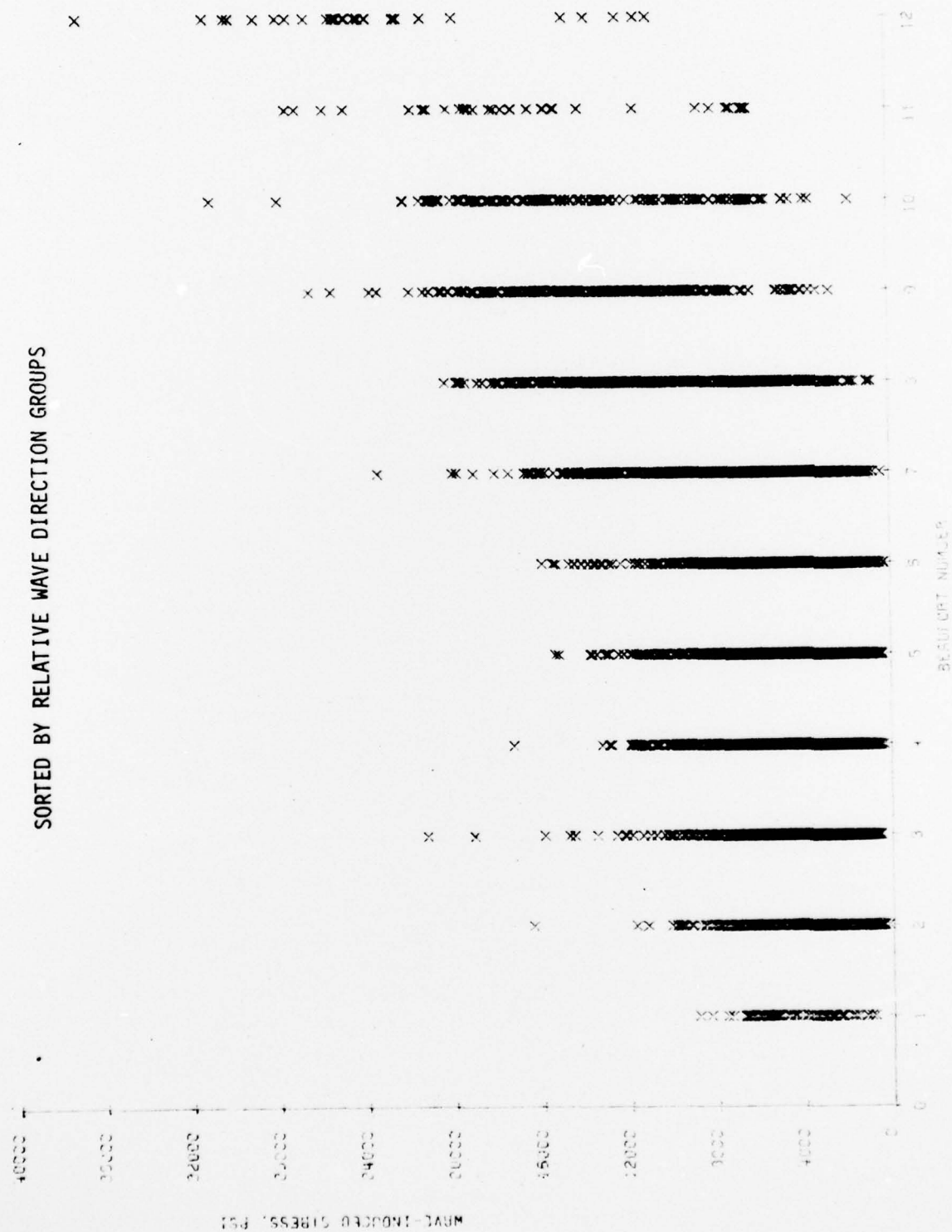


Figure B-24. MAX WAVE-INDUCED MID VERT BENDING STRESS VS BEAUFORT NO.-MCLERN THREE SEASONS

APPENDIX C

LISTING OF OVERALL MAXIMUM PEAK-TO-PEAK LONGITUDINAL VERTICAL BENDING STRESSES

This appendix contains a listing of maximum peak-to-peak longitudinal vertical bending stress for each digitized interval. The peak-to-peak value is calculated by subtracting the maximum negative excursion from the maximum positive excursion. Since these maxima are not necessarily consecutive, their value does not, in general, correspond to the definition of the maximum peak-to-trough value. A drift in the average value (e.g., diurnal variations) during the interval may be reflected in an increased peak-to-peak value. Each maximum applies only to the 20-minute segment in each interval characterized by the digital record. The interval designation is identical to that used in Appendix A.

SEA LAND MCLEAN 1975 SEASON DIGITAL

VOYAGE NUMBER 60W

MCLEAN21760W00101	06238
MCLEAN21760W00102	04936
MCLEAN21760W00103	06201
MCLEAN21760W00104	06002
MCLEAN21760W00205	05949
MCLEAN21760W00206	05804
MCLEAN21760W00207	05873
MCLEAN21760W00208	06757
MCLEAN21760W00309	06726
MCLEAN21760W00310	04235
MCLEAN21760W00311	07137
MCLEAN21760W00312	06201
MCLEAN21760W00413	05172
MCLEAN21760W00414	06125
MCLEAN21760W00415	05691
MCLEAN21760W00416	04570
MCLEAN21760W00517	04943
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13. ABSTRACT <p>One of the class of eight SL-7 high speed containerships has been extensively instrumented with stress, strain and motion sensors. These have been modified for the Third Season of data acquisition to emphasize measurement of hatch corner and bow sideshell strains. Much of the previous instrumentation inventory, including a wave height radar and Tucker wave meter, has also been employed in the Third Season. This report contains a summary of the recorded data, examples of the analog records, a catalog of the data formats and a listing of the available data intervals. Some analysis of the data is also reported including midship bending stresses encompassing all three data seasons.</p> <p>Data collection for the third season began with the west-bound North Atlantic voyage 59 on January 17, 1975 and terminated with westbound voyage 61 on March 17, 1975.</p>			

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KEY WORDS

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LINK B

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Containership

Stress

Wave Measurements

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Instrumentation

Slamming

Ship Motions

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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
teaspoons	teaspoons	5	milliliters	ml
tablespoons	tablespoons	15	milliliters	ml
fluid ounces	fluid ounces	30	milliliters	ml
cups	cups	0.24	liters	l
pints	pints	0.47	liters	l
quarts	quarts	0.95	liters	l
gallons	gallons	3.8	liters	l
cubic feet	cubic feet	0.03	cubic meters	m ³
cubic yards	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 after subtracting 32	Celsius temperature	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	ac
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	ton
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
m ³	cubic meters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 then add 32	Fahrenheit temperature	°F



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